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ZANZIBAR PROTECTORATE



ANNUAL

MEDICAL AND SANITARY REPORT

FOR THE

Year ended 31st December, 1934

PRICE: Rs. 2

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1935

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OFFICE OF THE
DIRECTOR OF MEDICAL SERVICES,

Zanzibar, 27th March, 1935.

Sir,

I have the honour to submit for the information of His Excellency the British Resident and for transmission to the Right Honourable the Secretary of State, the Medical Report on the Health and Sanitary Conditions of the Zanzibar Protectorate for the year 1934, together with the Returns, etc., appended thereto.

I have the honour to be,

Sir,

Your obedient servant.

W. L. WEBB.
Director of Medical Services.

THE HONOURABLE,
CHIEF SECRETARY TO THE GOVERNMENT,
ZANZIBAR.

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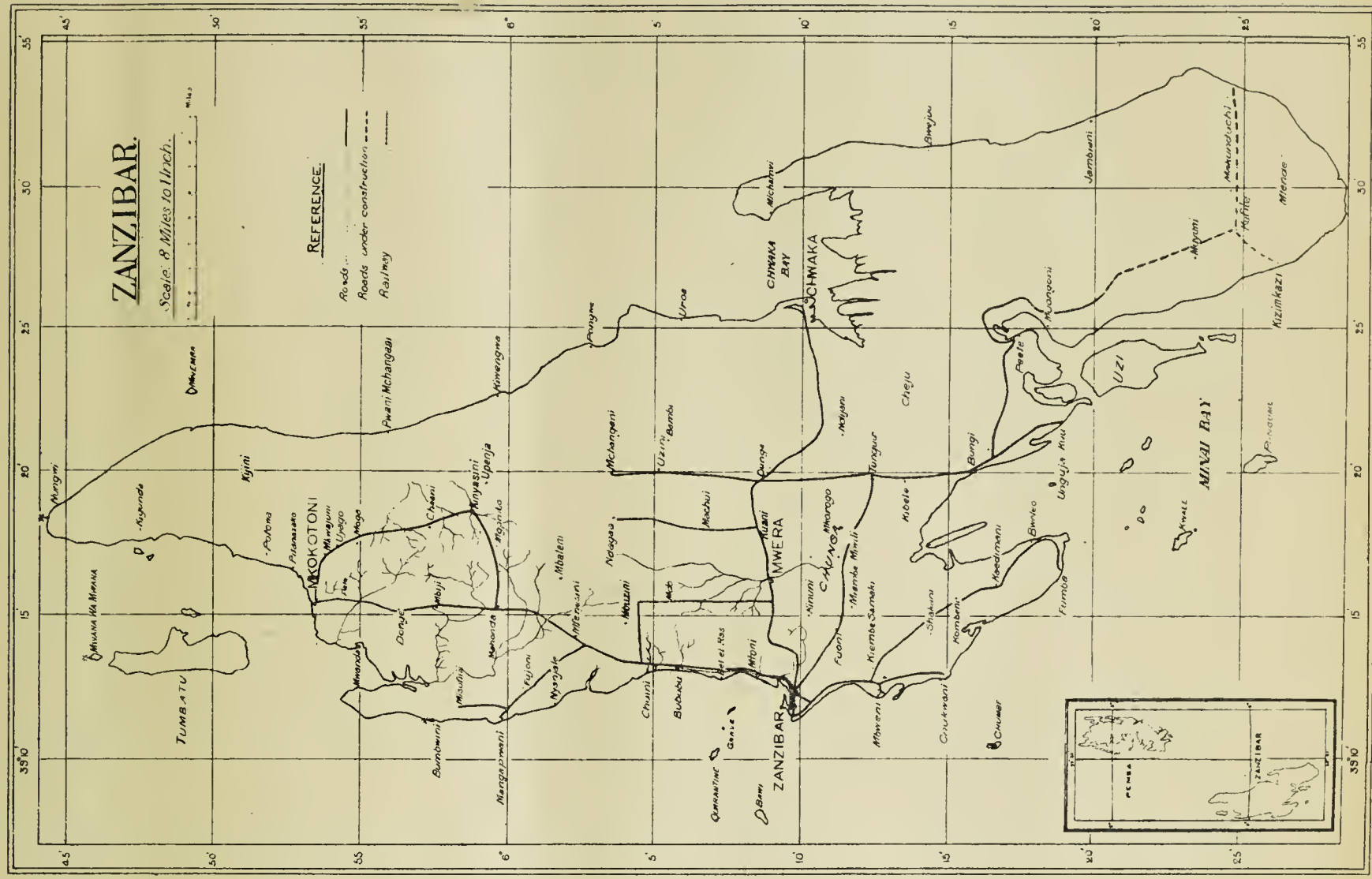
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SECTION I.

ADMINISTRATION.

GENERAL REVIEW.

The year 1934 saw the implementation of Sir Alan Pim's recommendation that the post of Deputy Director of Sanitary Service should be abolished when Dr. B. Spearman, who, up to the time of his departure had acted as Director, retired from the service. It soon became evident that the services of a senior officer to advise on sanitary matters and who could act as Director when required was necessary and Dr. S. W. T. Lee, Senior Health Officer, Uganda, was transferred to Zanzibar as Senior Medical Officer according to the nomenclature adopted for the Colonial Medical Service. The establishment of Medical Officers, which in 1933 consisted of a Director of Medical and Sanitary Services, a Deputy Director of Sanitary Services, Resident Surgical Officer, Pathologist and nine Medical Officers, a total of 13, was thus reduced to 12 in 1934 by the substitution of an Senior Medical Officer for the Deputy Director of Sanitary Services and by the reduction of medical officers from nine to eight.

The Veterinary Sub-Department, which had in the past come under the Medical Department was transferred to the Agricultural Department, also in accordance with the recommendation of Sir Alan Pim.

The head quarters office of the department was removed from the Health Office to allow the pathological laboratory to be extended and to make way for the subsequent transfer of the Chemical Laboratory of the Agricultural Department to the same building. There are obvious advantages in the two laboratories being in close proximity, as much of their work, water and food analysis for example, overlaps and they can share certain common services. The prospective removal of the Agricultural Department Offices to a house near the Health Office will allow of closer collaboration between the Departments in laboratory and veterinary work.

General Organization.—Before considering particular aspects of the medical work undertaken in the Protectorate, it appears advisable to review its activities generally. In Zanzibar there is one hospital unit situated in the town for Europeans, subordinates and natives which is apart from the other activities of the department and does not participate in the general work, except to receive patients referred. The native staff of this hospital is separate from other native medical staff of the Department and is not interchangeable moreover the native staff of the hospital are mainly illiterate and their duties are largely restricted to those of a menial nature, though they are competent to undertake surgical dressings under supervision. Most of the technical work is therefore done by the European and Asiatic staff. In a building in close proximity to the hospital, but separate from it is an organization known as the "Central Dispensary" which is the headquarters of a unit embracing the rural dispensary service and such town and Protectorate services as the police dispensary, prisons, lunatic asylum, home treatment service, the pauper asylum and the leper colony at Walezo the tuberculosis clinic and the hospital and the School Medical Service. This unit is also concerned with the training of native personnel for work within its own sphere of activities or at rural dispensaries throughout the Protectorate. These employees of the department represent the most highly trained of any; all are literate and many show signs of aptitude for medical work, but even so their training is insufficient, principally on account of the shortness of the period of training, and also because the training has in the past been mainly theoretical. Patients do not attend the Central Dispensary but are seen at the hospital which is so overcrowded as to preclude any hope of training within its walls. In Pemba the situation is much the same as in Zanzibar in so far as native personnel are concerned, that is that natives employed in hospital are mainly illiterate and are not interchangeable with those employed at rural dispensaries who are literate and possess a better professional education. Town and rural activities however come under the care of a single medical officer in each of the two sub-districts of the island.

Special Activities.—A tuberculosis campaign is operated as a separate unit in Zanzibar Town, though towards the end of the year there was a tendency towards its absorption into the Central Dispensary. A malarial investigation is being undertaken in Zanzibar from funds supplied by the Colonial Development Committee. Lepers are segregated at Funzi island and are under the medical care of the Medical Officer, Wete, Pemba, whilst a leprosy investigation has been entrusted to Dr. T. B. Welch who was sent out under the auspices of the British Empire Leprosy Relief Association, and has resided at Wete during the last two years. Maternity and

Child Welfare is the concern of the Zanzibar Maternity Association, which receives financial assistance from Government. The pathological laboratory and the port and town health organization for Zanzibar Town completes the activities of the department.

Native Personnel.—In Zanzibar, as elsewhere in tropical Africa, both on economic grounds and as a thing desirable in itself, the extension of the benefits of Western medical science to rural populations must be through the agency of the native himself. The absence of facilities in Zanzibar for training natives in medical work has operated more strongly than any other single factor against the successful establishment of a medical service for rural native populations, and the provision of such facilities is the most important requirement of the future. Two natives of Zanzibar were due to return from Uganda after completion of a five year course of study at Makerere College and Mulago Medical School, and it is hoped to utilize them next year to assist in the training of native personnel. The unification of the native medical service, so that dispensary and hospital staff become interchangeable and all can obtain the benefit conferred by work in the Zanzibar Hospital is desirable, but must await the replacement of illiterate by literate natives. The most urgent need of the Protectorate so far as the Medical Department is concerned, is the introduction of some scheme which will allow organized training in medical subjects to be given to natives, and which will attract the better type of native to the service and provide him with a career. With regard to women, the position is worse. Ayahs are employed in the hospitals, mainly in the capacity of ward maids. Not only are those so employed illiterate but there are no literate women available for training who would accept employment as nurses at any rate of salary which Government could afford to pay. With regard to both men and women the advancement of any medical training scheme is severely hampered by the low educational standard of the general native population, and must await the raising of this standard before much progress can be expected. A start can be made with the men as soon as arrangements can be completed, but it will be many years before any use can be made of the women, both on account of custom and illiteracy.

The Dispensary System.—There are sixteen rural dispensaries in Zanzibar Island and eight on Pemba Island. In Zanzibar, these dispensaries come under the care and supervision of the staff of the Central Dispensary referred to above, and have no direct connexion with the hospital. In Pemba, they come under the medical officers of the two sub-districts. These rural dispensaries are small, usually two roomed, buildings staffed by one trained dispenser. Each serves a very limited population of a few thousand people and in consequence the number of patients attending for treatment is usually insufficient to afford a full day's work for the dispenser. His spare time is employed in visiting surrounding villages in the capacity of a sanitary inspector, giving advice and recording his findings. The system is an excellent one with great potentialities, but the lack of training on the part of the dispensers, and the absence of a tribal or other communal organization which would ensure the carrying out of recommendations, militates at present against its effectiveness. The treatment afforded at these dispensaries is not very valuable, being mainly restricted to the exhibition of stock medicines for diseases empirically diagnosed. A few intramuscular injections of a bismuth preparation are given for yaws, but none of the dispensers is competent to give an intravenous injection. In addition to the rural dispensaries there are certain other curative centres which come under the care of the Central Dispensary Staff. Instruction in first aid and the exhibition of simple medicaments was given to a certain number of rural school teachers situated remote from a dispensary and they have attended to the minor ailments of their pupils. There is a dispensary connected with the Welezo unit where paupers, lepers and tuberculosis cases are under the care of the sisters of the Catholic Mission, and another at Mwembeladu the headquarters of the Zanzibar Maternity Association. The "Home Treatment Service" undertaken by the native staff of the Central Dispensary, has not been very successful this year and few patients were seen. Arrangements are being made for one of the Nursing Sisters to qualify as a health visitor on her next leave, and it is hoped to reinstate this service under her direction in due course.

The Tuberculosis Campaign.—An investigation into the prevalence of tuberculosis in the Protectorate was undertaken in 1931, and as a result a tuberculosis campaign was inaugurated by the formation of a special clinic and the provision of beds at Walezo. The number of new cases recorded annually in the Protectorate is in the neighbourhood of 250, and is decreasing. The highest number ever recorded was 538 in 1931, the year of survey. In 1933 in England and Wales with a population of approximately forty millions, 66,351 new cases were reported, and *pro rata*, Zanzibar would record 400 cases annually. The deaths from tuberculosis in Zanzibar in 1933 were 93, a rate of 392 per million compared with the English rate for the same year of 824 per million. It does not therefore appear that the tuberculosis situation in Zanzibar

need give rise to any alarm, and it is doubtful if expenditure of time and money on a campaign against this disease can be justified in a country where so much preventable and curable disease abounds, and where there is so little money available for the purpose of combatting it. What is available might be better spent in an endeavour to raise the whole standard of treatment generally, and to bring it within the reach of more people. This does not mean that tuberculosis would be neglected, and it might even mean that it would receive more attention than it does at present, but that the campaign and the clinic would be absorbed into the general hospitals and dispensaries. It is generally admitted that the disease does not seriously affect the general native population, who comprise four fifths of the total population and who have first claim on medical expenditure.

Leprosy.—Leprosy is controlled by a Decree aiming at rigid segregation. The asylum is located on a small island off Pemba,—Funzi Island—where the lepers are housed in barrack like back to back quarters. They are cared for by two ladies of the University Mission who are resident on the island and who by their care and devotion do all they can to bring relief and happiness to the inmates. But in most cases, admission to Funzi is for life, and those who are sent to the island may usually give up hope of seeing relatives or friends again, because, although visitors are allowed, only the comparatively wealthy or those living in the vicinity can afford to make the journey. Proposals are under consideration to close Funzi, and to establish two leper settlements, one in Pemba Island and one in Zanzibar. It is suggested that the Settlements should be near main roads and central, so that relatives and friends would be put to a minimum of trouble and expense when visiting; that they should be built on village lines, with signs of compulsion well in the background; and finally, that rigid segregation should be relaxed. Dr. Cochrane, of the British Empire Leprosy Relief Association estimated that there were about 500 lepers in the Protectorate. Of these never more than 150 have been segregated, the remainder remaining at large, unrecognized. Therefore, as a preventive measure, the policy of rigid segregation has proved itself a failure, and even if a policy of attraction fails, as it may, it can do no more harm than is being done at present and will at least bring some degree of happiness and freedom to the inmates of Funzi. It is hoped to implement this proposal next year.

Following Dr. Cochrane's visit to Zanzibar, the British Empire Leprosy Relief Association detailed an officer, Dr. T. B. Welch, to visit Zanzibar to enquire into the extent of the disease and to make recommendations for its better control and treatment. On Funzi, much was found that could be improved, particularly with regard to housing, dietary, and the relief of intercurrent disease. Dr. Welch returns to England early in 1935.

Maternity and Child Welfare.—Apart from the acceptance of any patient who presents herself for admission to a hospital, there is no maternity and child welfare work undertaken by Government, except on the payment of a yearly subsidy to the Zanzibar Maternity Association. This association is an institution of many years standing governed by a committee representing the various non-European communities living in Zanzibar, and originally intended to provide an adequate service of midwives for the communities concerned at a reasonable cost. In 1925, the Association extended its activities by opening a charitable maternity home at Mwembeladu principally for the use of Swahilis or others who could not afford to pay fees. In 1931 it further extended its charitable activities by opening and equipping a number of rural maternity homes under the charge of locally trained Swahili women. During the year under review, the committee decided to approach Government with a request to take over the rural centres in 1935, and this was agreed upon.

The intention of the Association in creating these rural maternity homes was admirable but it is regrettably true that its effort was premature. The women chosen for training were without exception illiterate, and the training given to them inadequate. In effect, they are midwives in name only, as they are not competent to afford any relief to a woman in labour, nor to recognize abnormality in time to obtain assistance. Retrograde as it may appear the question of closing these centres when they are taken over by Government must become a matter of urgent consideration, and this is all the more regrettable because there is at present nothing to offer in their place.

Government Dental Surgeon.—The appointment of Mr. I. S. Rutter, L.D.S., R.C.S., Eng as a whole time dental surgeon at the beginning of the year filled a much felt requirement. Apart from the amenities extended to officials by his appointment, the part he plays in the School Medical Service is of the greatest importance to the health of the general population. He examined and treated a large number of children during the year and his findings are printed under the section of this report dealing with "School Hygiene".

Vital Statistics.—The registration of Births and Deaths is enforced by Decree, but there are indications that many escape registration. A new vital statistics return form was submitted for introduction in 1935, but until registration can be rendered effective, improvement cannot be looked for. Investigation into the vital trends of small populations was commenced during the year, and gave the greatest promise of producing some and the only reliable knowledge of what is happening to the people. The figures are at present too small to be of very much value, but there are indications that the infantile mortality rate is nearer 400 per thousand than the recorded rate of 91. It will probably be found that in so far as the general native population are concerned, both birth and death rates are considerably higher than those recorded.

School Medical Service.—This service was introduced in 1923, but owing to shortage of staff, had been left in the hands of assistants and had ceased to afford a reliable indication of the health of school children. In so far as Government schools are concerned at least, it is hoped that in the future every child will be examined at least once a year by an European Medical Officer.

Although the present state of the activities of the department as outlined above does not appear in too optimistic a light, there is no reason for pessimism with regard to the future. Medical relief to reach the African must be made available through the agency of people of his own race. The Zanzibar African in general is at a low educational standard at present, but in the course of time and with adequate organized training, he will be capable of rendering good service in the department.

The form of the Annual Report has been altered this year to conform more closely with that of other dependencies.

(A) STAFF.

Principal Appointments. Promotions. Changes, etc.

Appointments :—

	Date.
Dr. S. W. T. Lee, to be Senior Medical Officer	... 24-10-34
Dr. J. D. Robertson, to be Medical Officer	... 14- 6-34
Dr. H. C. E. Quin, to be Temporary Medical Officer	... 12- 1-34
Miss E. O. Hickling, to be Nursing Sister	... 27- 7-34
Miss M. M. M. Rose, to be Nursing Sister	... 1-11-34
Miss H. M. Cheshire, to be Nursing Sister	... 29-11-34

Acting Appointments :—

	From.	To.
Dr. B. Spearman, O.B.E., to act as Director of Medical and Sanitary Services	... 1- 1-34	2- 6-34
Dr. S. M. Vassallo, to act as Director of Medical and Sanitary Services	... 3- 6-34	13- 6-34
Dr. J. M. Semple, to act as Deputy Director of Sanitary Services and Health Officer	... 1- 1-34	28- 3-34
Miss M. A. McKie, to act as Matron	... 1-11-34	31-12-34

Termination of Appointment :—

Miss M. G. Miller, Nursing Sister	... 24-11-34
-----------------------------------	--------------

Transfers :—

Dr. J. M. Semple, Medical Officer, to be Senior Medical Officer, Uganda	... 29- 3-34
Dr. H. O. W. Pitchford, Medical Officer, to be Medical Officer, Kenya	... 13- 9-34
Miss M. M. Richards, Nursing Sister, to be Nursing Sister, Kenya	... 6- 6-34

Retirements :—

Dr. B. Spearman, O.B.E., Deputy Director of Sanitary Services	... 11-10-34
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(B) LEGISLATION AFFECTING PUBLIC HEALTH ENACTED DURING THE YEAR.

Government Notice No. 14.	The Quarantine (Amendment) Rules, 1934.
Government Notice No. 21.	The Poisons (Amendment) Rules, 1934.
Government Notice No. 26.	The Zanzibar Town Board Decree, 1933. Appointment of Members—Medical Officer of Health to be an Official Member.
Government Notice No. 32.	The Public Health (Aerated Water and Ice Factories) (Amendment) Rules, 1934.
Government Notice No. 33.	The Public Health (Houses let in lodgings) (Amendment) Rules, 1934.

Decree	The Diseases of Animals (Amendment) Decree, 1934. This amending Bill implements the transfer of the duties under the Diseases of Animals Decree, 1923, from the Medical Department to the Department of Agriculture.
Government Notice No. 59.	Under the Customs Management Decree, 1926, the importation into the Protectorate of all condensed milk containing less than 9% of milk fat was prohibited.
Decree.	The General Revision Decree, 1934, containing various amendments of the Public Health Decree, 1929, and a new section dealing with the control of persons on board any vessel exposed to infection.
Government Notice No. 73.	The Public Health (Cemeteries) Rules, 1934.
Government Notice No. 74.	Appointment of Cemeteries in accordance with the Public Health Decree, 1929.
Government Notice No. 75.	Recognized Family Vaults under the Public Health Decree, 1929.
Government Notice No. 103.	Appointment of the Municipal Officer appointed under the Zanzibar Town Board Decree, 1933, to be the Licensing Officer for the Town of Zanzibar for the purposes of the Public Health Decree, 1929.

(C) FINANCIAL.

TABLE OF ACTUAL EXPENDITURE.

		£	£	£	£
		1931.	1932.	1933.	1934.
Medical Department	...	52,881	51,727	49,294	37,846
Municipal votes controlled by Medical Department	...	—	—	—	7,867
Grants in aid	...	1,580	1,665	1,711	1,675
		—	—	—	—
Total	...	54,461	53,392	51,005	47,388
		—	—	—	—
Total Revenue of the Protectorate	...	536,387	455,579	475,465	451,182
Percentage of Total to Total Revenue	...	10.15	11.72	10.73	10.50
Total Revenue of the Department	...	4,229	3,814	3,527	3,855
		—	—	—	—

SECTION II.

PUBLIC HEALTH.

(A) GENERAL REMARKS.

Return for the Year.—The full returns for the year appear in Table A Section VI and the comparison between them and those for previous years is set out below:—

	1931	1932	1933	1934
New cases	140,698	140,175	157,167	159,686
In-patients	4,266	4,534	4,815	4,463
Total attendances	414,567	434,284	502,672	536,242
Surgical Operations (major)	1,224	1,393	1,320	1,299
Surgical Operations (minor)	2,684	2,812	2,340	3,370

The percentage of new cases by sexes for the last five years is given in the following table:—

	1930	1931	1932	1933	1934
Males	69.8%	70.9%	73.2%	74.5%	73.6%
Females	30.2%	29.1%	26.8%	25.5%	26.4%

The proportion of women seeking treatment is low, and shows a tendency to decrease. It is not unusual to find this disproportion between male and female attendances when dealing with primitive tribes who are unused to hospitals and who are inclined to distrust new institutions, but in Zanzibar hospitals and dispensaries have been established for years, and are not new institutions to be regarded with suspicion. The explanation is no doubt due in part to the fact that the native population of Zanzibar is almost entirely Mohammedan and that the women themselves object to being seen unveiled by men, a point of view which is fully endorsed by the male relatives of the women. The solution would appear to be in the provision of special clinics at hospitals for women and children, under the care of a lady doctor or nursing sister. At dispensaries relief of the situation must await the advent of trained native nurses.

Only 104 women attended any hospital for conditions arising out of the puerperal state, of whom more than half (62) were seen at the Zanzibar hospital.

It is not possible to detail the incidence of disease amongst the component races of the Protectorate, because the data available are not reliable. There is no real distinction, except perhaps in social customs, between the various groups of Indians who have been domiciled in Zanzibar for generations and similarly situated Arabs. The bulk of the population is made up of peoples classed under the generic name Swahili, but very many mainland and indigenous races are represented in the group; the labour entailed in their differentiation would be out of proportion to any value that could be attached to figures so obtained.

Deaths in Hospital.—The principal causes of deaths in hospital during the last four years were:—

	1931	1932	1933	1934
Total deaths in hospitals	442	222	387	446
Senility	101	86	103	127
Pulmonary Tuberculosis	14	40	52	50
Pneumonia	41	12	15	26
Ancylostomiasis	15	11	16	19
Debility	24	20	26	19
Diseases of Heart	16	9	14	15
Malaria and Blackwater	6	9	6	14
Nephritis	15	10	8	10

It is seen that senility has been the chief cause of death for some years. This is due to the fact that the aged and indigent of the Protectorate are usually admitted to the Walezo Poor House when they are no longer able to look after themselves or have no relations to take the responsibility and remain there until they die.

I. GENERAL DISEASES.

Epidemic, Endemic and Infectious Diseases.—The number of cases and deaths falling into this group dealt with during the last four years were as set out below:—

	Total of all new cases	Epidemic, Endemic and Infectious Diseases	Deaths
1931	140,698	20,993	74
1932	140,175	17,140	69
1933	157,167	17,900	77
1934	159,686	19,832	90

General Diseases.—2,465 new cases compared with 2,715 cases in 1933 were included in this group and the only matter of any significance amongst them is that 680 were cases of anæmia, mostly reported from district dispensaries, many of which were no doubt secondary to helminthic infection. Avitaminosis was recognized during the year and 21 cases of beri beri, pellagra and rickets were reported.

Affections of the Nervous System.—This group accounted for 9,627 cases and nearly half of them were due to diseases of the eye and adnexa. There were 9,686 cases recorded last year. Most of the eye diseases were dealt with at the special clinic which is maintained in connexion with the Zanzibar hospital and, apart from the miscellaneous diseases grouped under “others”, conjunctivitis accounted for most disability. The majority of the remainder were recorded as headache and neuralgia.

Affections of the Circulatory System.—1,121 cases compared with 978 in 1933 were recorded and of them almost half were due to lymphadenitis—non-specific bubo.

Diseases of the Respiratory System.—These totalled 12,529 and represented almost eight per cent of the total new cases. There were 11,574 recorded last year. Acute and chronic bronchitis accounted for the majority of this year's cases, which were mostly reported from district dispensaries. Cases of coryza totalled 1,102 and it is probable that no very clear distinction is drawn at rural dispensaries between coryza, bronchitis and influenza. 229 cases of pneumonia were seen of whom 103 were admitted in hospital where 28 died.

The more important conditions met with in this group during the last four years were:—

		1931	1932	1933	1934
Bronchitis	...	9,938	8,416	8,227	10,097
Pneumonia and Bronchopneumonia	..	295	186	126	229
Pleurisy	...	77	72	92	36
Asthma	...	593	471	435	437

Diseases of the Digestive System.—43,422 appeared under this heading compared with 41,321 in 1933. The majority of the cases seen were accounted for by the following conditions:

Constipation	...	16,654	Colic	...	1,665
Ancylostomiasis	...	12,577	Affections of the throat	...	1,515
Dental caries	...	6,766	Ascaris	...	597

56 deaths were recorded in hospital, 19 of which were attributed to ancylostomiasis. Ancylostomiasis is widespread and the reasons for its prevalence and the measures which can be adopted to decrease its incidence are referred to in Section III. Dental caries, particularly amongst children, is a serious matter and is the cause of considerable disability—the question is discussed under Section III (iii) in relation to school children. Affections of the throat are mostly sore throats due to a variety of causes.

Diseases of the Genito-Urinary System.—Of the total of 3,754 cases recorded schistosomiasis accounted for 874; the figures for 1933 were 3,608 and 736 respectively. The majority of these cases were reported from Pemba but every unit recorded the occurrence of one or more. Ulcers of the penis totalled 567 and as most of them were reported from dispensaries it is possible that some at least were chancres or condylomata. There were 28 deaths from diseases in this group in hospital, ten of which occurred amongst the 28 cases of nephritis admitted.

Puerperal State and Diseases of Infancy.—The total number of cases of illnesses attributed to the puerperal state was 104, compared with 93 in 1933. The numbers recorded under “Diseases of Infancy” were nine and 13 respectively.

Diseases of the Skin and Cellular Tissue.—This formed the largest group totalling 45,505 cases compared with 50,564 in the previous year. They were chiefly made up as follows:—

Ulcers	...	26,855
Scabies	...	8,490
Cellulitis	...	1,131
Jiggers	...	1,343
Dermatitis	...	978

738 ulcers were treated in hospital with four deaths; some of the ulcers are of the so called tropical type but many are probably due to specific disease or yaws.

Malformations.—Only seven cases were seen.

Diseases of the Old Age.—376 cases are recorded and those who were admitted to the Walezo Poor House accounted for 222. The remainder were mostly old people admitted into various hospitals as they were so feeble that their relatives wished to be rid of the responsibility of their maintenance and care. 127 of these cases died in hospital. Not all, of course, were cases admitted during 1934 as the majority of the deaths occurred amongst old people who had been in a hospital or the poor house for some time.

Diseases due to External Causes.—In this group 11,222 cases were recorded most of them, 3,693, being due to injuries caused by falling or were wounds caused by sharp instruments. The number of cases recorded in 1933 was 10,911.

Diseases due to Ill-defined Causes.—The cases recorded in this group were mostly due to pyrexia of unknown origin to debility and to other undefined conditions.

The incidence of the groups of diseases treated at Government hospitals during the last four years was:—

		1931	1932	1933	1934
Epidemic, Endemic and Infectious	...	15%	12%	11%	13%
Nervous System	...	7%	7%	6%	7%
Respiratory System	...	9%	8%	7%	7%
Digestive System	...	29%	31%	26%	27%
Skin and Cellular Tissue	...	20%	23%	32%	29%
External Causes	...	8%	8%	7%	7%
Others	...	12%	11%	11%	10%

II. COMMUNICABLE DISEASES.

(a) Mosquito or Insect-borne.

Malaria.—During the last four years the incidence of malaria in Zanzibar Town was:—

		1931	1932	1933	1934
Total cases treated	...	4,679	3,375	3,580	4,473
Percentage of malaria cases to all diseases treated at the hospital	...	10.01%	7.59%	7.76%	5.63%

In the whole Protectorate the incidence was:—

		1931	1932	1933	1934
Total cases treated	...	10,146	8,369	7,536	9,796
Percentage of malaria cases to all cases treated in Government Hospitals	...	7.21%	5.97%	3.67%	6.13%

The township of Zanzibar is usually regarded as being almost free from malaria excepting for a period of a few months immediately during and after the spring rains, whilst large tracts of the rural districts of both islands are hyperendemic areas. It is therefore somewhat difficult to explain these figures except on the assumption that relief for malaria is not sought in rural districts to the same extent as in Zanzibar Town. The type of malaria recorded by the Pathologist in the routine examination of bloods sent to him and by the Malaria Research Officer in selected communities examined by him are set out below:

		<i>P. falciparum</i>	<i>P. vivax</i>	<i>P. malariae</i>
Pathologist	...	79.3	20.3	0.4
Malaria Research Officer	...	62.5	28.8	8.7

These figures relate to Zanzibar, only. In Pemba it would appear that the proportion of infections due to *P. vivax* is considerably higher than that of Zanzibar.

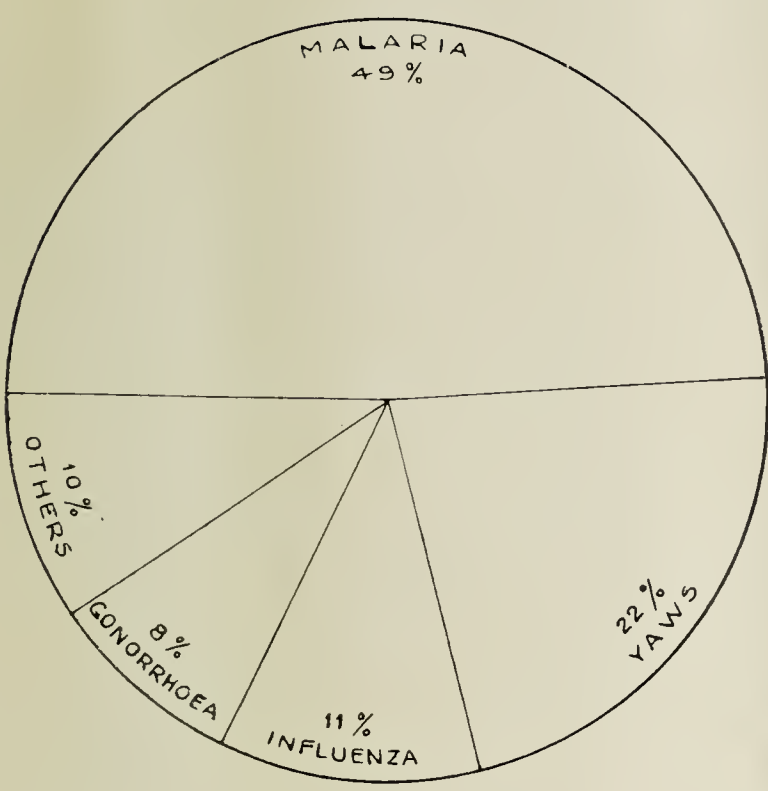
Fourteen persons died of malaria in hospital and 751 cases of malarial cachexia were seen. A similar number of deaths were recorded in 1933.

Blackwater Fever.—Fourteen cases of blackwater fever were diagnosed. Detailed reports were received in respect of 11 cases only, and concerned seven Indians, three Goans and one Chinese. They were engaged in the following trades—Merchants and traders six, clerks three, housewife one, child one. In every case a history was given of frequent attacks of malaria inadequately treated. The onset of the blackwater happened to coincide in every case with the end of the periods during which malaria was most common.

None of the cases presented any points of interest; five of them died giving a case mortality of 35.7 per cent.

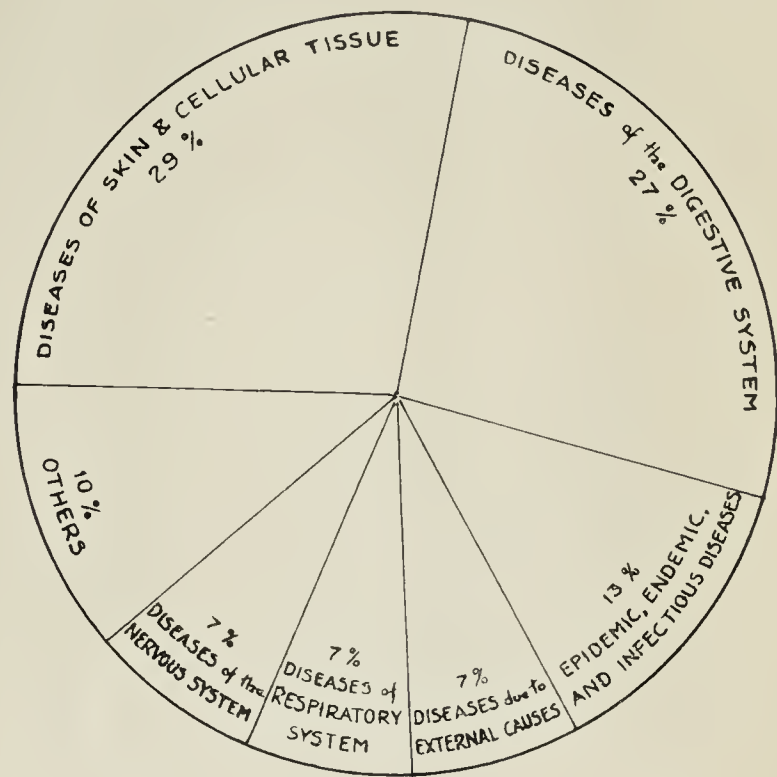
Four of the cases were from Zanzibar and seven from Pemba. Most of the remainder, for whom no details are available, occurred in Zanzibar Island. There is, therefore, no evidence to indicate that blackwater fever is more prevalent in one part of the Protectorate than in others.

The Proportion of Epidemic, Endemic and Infectious Diseases.

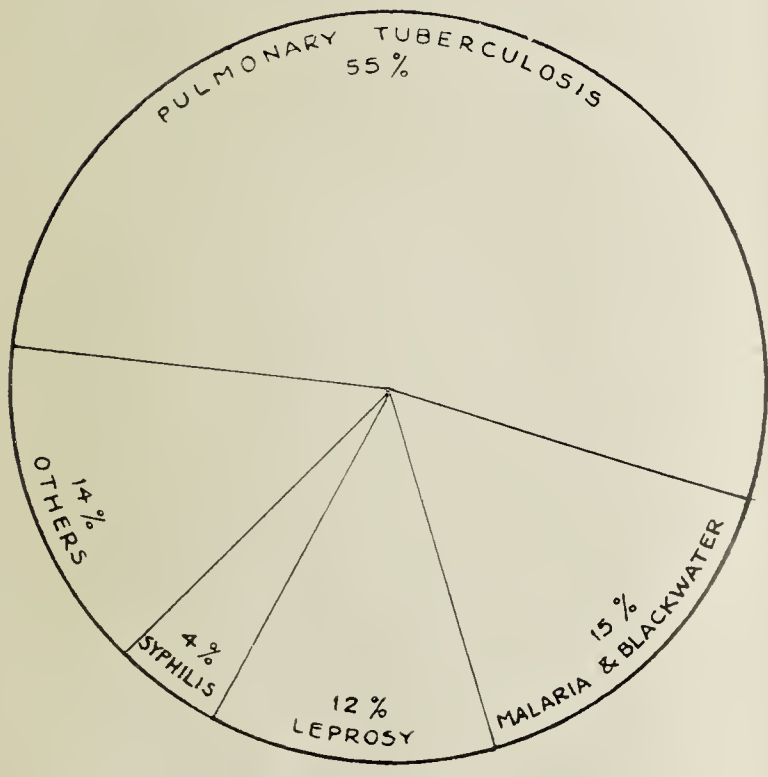


TOTAL INCIDENCE :- 19,833.

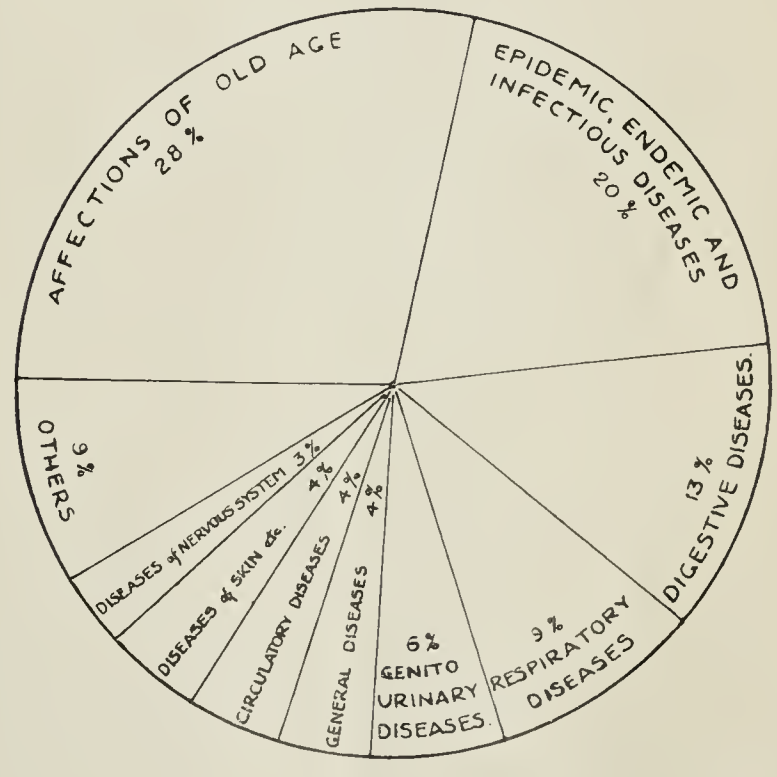
The Proportion of Epidemic, Endemic, Infectious, Systemic and other Diseases shown as Percentages of Total Cases.



TOTAL INCIDENCE :- 159,686.



TOTAL DEATHS :- 90



TOTAL DEATHS :- 446

(b) Infectious Diseases.

No serious epidemic of any sort occurred during the year. The more important infectious diseases encountered during the last four years are summarized in the following table:—

	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
	1931		1932		1933		1934	
Enteric Group	7	2	4	—	6	—	8 ✓	3 ✓
Small-pox	13	1	—	—	3	—	—	—
Whooping cough	98	—	125	—	201	—	70	—
Influenza	2,188	2	559	2	984	—	2,216 ✓	— ✓
Mumps	649	—	382	—	75	—	42	—
Dysentery	151	6	130	9	73	5	69	—
Leprosy	44	2	86	1	47	2	50	11
Chickenpox	12	—	46	—	25	—	76	—
Yaws	4,659	—	4,432	—	5,935	—	4,343 ✓	—
Tetanus	7	3	2	1	3	1	4	2
Tuberculosis	538	45	238	41	244	52	202 ✓	50 ✓
Syphilis	428	3	446	3	446	2	446	4
Soft Chancre	58	—	46	—	67	—	14	—
Gonorrhœa	1,734	2	1,775	1	1,662	2	1,698	—

Enteric Group.—Six cases of Typhoid Fever and two of Paratyphoid were reported. The cases and deaths occurring during the last four years were:—

	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
	1931		1932		1933		1934	
Typhoid Fever	4	—	4	—	5	—	6	3
Paratyphoid A	1	—	—	—	1	—	1	—
Paratyphoid B	1	1	—	—	—	—	1	—
Type undefined	1	1	—	—	—	—	—	—

Of this year's cases all occurred in Zanzibar Town; in addition six cases were notified by private practitioners but none of these diagnoses were confirmed by laboratory investigation.

Whooping Cough.—There was a decrease in the number of cases dealt with and there was no epidemic spread of the disease.

Influenza.—The incidence of this disease increased considerable from 984 in 1933 to 2,216 in 1934, due to a mild epidemic which prevailed during the earlier part of the year. Few serious cases were met with and there were no deaths.

Dysentery.—The incidence of dysentery decreased still further to 69, no deaths were recorded although 17 other cases were notified by private practitioners.

Leprosy.—A report on leprosy in the Protectorate is in Section III (b).

Tuberculosis.—202 cases and 50 deaths were reported and of these 191 were pulmonary cases. The deaths notified as being due to tuberculosis in Zanzibar Town for the past 12 years are given below:—

1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934
185	167	132	45	138	190	125	91	57	54	52	34

Syphilis and Yaws.—446 new cases of syphilis and 4,343 of yaws were recorded during the year. The relative incidence of these two diseases is not yet fully known, but there are indications that syphilis is more common than has hitherto been suspected.

Gonorrhœa.—1,698 new cases presented themselves for treatment. This figure, too, probably does not reflect the true incidence of the disease as a partial survey of the police and prisoners revealed the fact that nearly two-thirds of them were either suffering from acute or chronic gonorrhœa or gave a history of having done so.

(c) Helminthic Diseases.

Ancylostomiasis.—There was a slight increase in the number of cases dealt with—12,577 as compared with 12,488 in 1933. The disease is extremely insidious and people do not always seek relief for infestations with this parasite even when they are aware that they harbour it.

Schistosomiasis.—An increase of cases from 736 in 1933 to 874 in 1934 were seen. The disease is discussed more fully in Section III.

Ascariasis —597 cases were seen as compared with 329 in 1933. The disease is widespread but appears to be responsible for few symptoms.

(B) VITAL STATISTICS.

(1) General Native Population.

The estimated population of Zanzibar Protectorate at the end of the year 1934 was 244,104, a figure obtained from the 1931 census figure by the addition of the number of births in excess of deaths and immigrants in excess of emigrants since the date of the census. The number of births recorded during the year was 4,466 and of deaths 4,287, giving a crude birth rate of 18.3 per 1,000 and a death rate of 17.6 per 1,000.

	Estimated mid year population	Birth rate	Death rate
1931	237,000	19.7	19.5
1932	240,000	18.9	19.3
1933	244,000	18.8	15.1
1934	244,000	18.3	17.6

The figures given above vary slightly from those published in previous reports, because they have been calculated on the estimated mid year populations.

These rates mean very little in a mixed population such as exists in Zanzibar, and it is not possible to deduce from them what is happening amongst the various communities. These communities comprise Europeans, Goans, local and British Indians, local Arabs, immigrant Arabs, local Africans and mainland Africans, and of these, only the Europeans and Goans can be regarded in any way as closed communities. The local and the mainland natives are so intimately mixed up as to be inseparable; many of the mainlanders, who originally no doubt came to Zanzibar as labourers, remained to settle, whilst the local natives must be partly the descendants of persons taken in slave raids on the mainland. The local Arab and the African are readily distinguishable in the extremes of the two races, but quite impossible to tell apart in other cases, and a very large number of the local inhabitants of the Protectorate who designate themselves either Arab or African are, in fact, a mixture of the two. The difference in reality is cultural and economic rather than racial. The immigrant Arab from Muscat and elsewhere is recognisably different from either the local Arab or the African; he is a seasonal visitor, but he often stays to settle in the island and soon becomes indistinguishable from the local Arab and his descendants even more so. Many of the British Indians come from families who have lived in Zanzibar for generations and, although the distinction between Arab and Indian is more clearly defined, there is a distinct intermingling of the two races.

From the facts at our disposal, it is, on this account and because of the seasonal wave of emigration and immigration, extremely difficult to assess the vital trends of the various races concerned, even if reliability could be placed on the figures obtained from the registers. It was thought that a consideration of the urban population of Zanzibar Town, and the rural populations of Zanzibar and Pemba districts might throw light on the subject. The composition of these populations in March 1931 according to the census was:

	Zanzibar Town.	Zanzibar District.	Pemba District.
Europeans	... 222	21	35
Indians and Goans	... 11,808	1,035	2,403
Arabs and African	... 33,219	91,374	95,274
Others	... 27	—	10
Total	... 45,276	92,430	97,722

The birth and death rates for the last four years were calculated on the census figures—as there is no way of assessing variations of populations since then by localities,—and gave the following results:—

	Zanzibar Town.		Zanzibar District.		Pemba District.	
Year.	Birth Rate.	Death Rate.	Birth Rate.	Death Rate.	Birth Rate.	Death Rate.
1931	13.5	26.0	28.6	23.8	14.4	12.6
1932	13.9	22.2	18.5	24.5	22.2	12.9
1933	14.4	21.3	21.1	17.4	20.1	11.2
1934	14.8	25.1	22.4	22.4	17.7	11.1

The most reasonable deduction to be made from these figures is that registration of births and deaths is ineffective and the results unreliable. The recorded excess of births over deaths in the last four years is 996, and if this figure is accepted the natural rate of increase of the population is less than one per 1,000 per annum, which is an extremely low figure for any population, particularly a native one.

It would therefore appear, unless registration can be made effective in a short time which is very unlikely, that a knowledge of the native populations of Zanzibar and their trends must await detailed investigations in the field of small selected communities. There appears to be little doubt in the minds of those Africans and Arabs who have so far been interrogated that their people are decreasing in numbers.

Infantile Mortality.—405 deaths of infants under one year of age were recorded amongst the 4,466 registered births, giving an Infantile Mortality Rate of 90.7 for the total population. The rate recorded last year was 61.2, but there is no doubt that these figures do not represent the truth. During the year 69 African and Arab women in Zanzibar, were interrogated, and stated that between them they had had 176 babies of whom 60 had died in their first year, representing a rate of 341 per 1,000, which is no more than would be expected.

In Pemba 85 women were questioned and it was found that of 336 live children born a total of 120 had died: this represents an infantile mortality rate of 357 which approximates to that which it is thought obtains in Zanzibar.

Still Births.—No figures are available for the Protectorate, but the returns of the Mwem-beladu Maternity Home of the Zanzibar Maternity Association over the last four years, numbering over 500 cases, indicate that the rate is rather in excess of 10 per cent of total live and still births.

Maternal Mortality.—No figures are available.

Immigration and Emigration.—There are two seasonal waves of emigration into Zanzibar: the first and largest is of natives from the mainland after the clove picking season, towards the end of the year, for the purpose of weeding and hoeing shambas; the second of Arabs from Muscat, and elsewhere in Arabia who sail their dhows down in the north east monsoon to arrive in Zanzibar at the beginning of the year. Most of these immigrants return to their native lands on the completion of their business after a few months residence in Zanzibar but some remain to settle and provide a disturbing element when endeavours are made to estimate the vital trends of the local peoples. In the past, the number of immigrants has been in excess of the number of emigrants, but in the year under review, the reverse has been the case.

		1932	1933	1934
Immigrants	...	18,873	15,691	12,778
Emigrants	...	14,493	14,525	13,491
		<hr/>	<hr/>	<hr/>
		+4,380	+1,166	—,713

If this tendency continues, the population of Zanzibar may become a decreasing one, as the recorded number of births in excess of deaths is so small.

(2) European Officials.

The officials included in Table A and B below are those whose names appear in the Protectorate Staff List only. Wives and families are not included.

TABLE A.

Table showing the sick, invaliding and death rates of Europeans officials during the last three years:—

		1932	1933	1934
Total number of officials resident	...	111	106	105
Average number resident	...	83.87	77.63	68.64
Total number on sick list	...	114	298	290
Total number of days on sick list	...	687	546	585
Average daily number on sick list	...	1.88	1.22	1.6
Percentage of sick to average number resident	...	2.24	1.93	2.33
Average number of days on sick list for each patient	...	6.02	1.83	2.02
Average sick time to each resident	...	8.19	7.03	5.57
Total number invalided	...	2	2	—
Percentage of invaliding to total residents	...	1.81	1.48	—
Total deaths	...	—	1	—
Percentage of deaths to total residents	...	—	.94	—
Percentage of deaths to average number residents	...	—	1.29	—

The most common diseases were:—

Malaria	...	105
Diseases of the Respiratory System	...	16
Diseases of the Digestive System	...	16
Influenza	...	131
Diseases of the skin	...	14
Local Injuries	...	12

Medical Boards were held to enquire into the health of two European officials during the year and the following recommendations were made:—

To proceed on home leave for treatment:

Chronic Toxæmia	...	1
General Debility	...	1

Deaths.—Nil.

(3) European Non-Officials.

221 European non-officials reported at the Government Hospital as compared with 270 during the previous year.

Deaths.—One death occurred during the year.

Pyrexia (undefined)	...	1
---------------------	-----	---

Principal causes of sickness:—

Malaria	...	26	Diseases of skin	...	13
Influenza	...	23	Tonsillitis	...	12
Bronchitis	...	16	Local Injuries	...	12

(4) Non-European Officials.

TABLE B.

Table showing the sick, invaliding and death rates of Non-European officials during the last three years:—

		1932	1933	1934
Total number of officials resident	...	561	535	421
Average number resident	...	508.69	483.94	378.51
Total number on sick list	...	625	387	562
Total number of days on sick list	...	3,084	2,489	2,840
Average daily number on sick list	...	8.45	6.81	7.78
Percentage of sick to average number resident	...	1.66	1.41	2.06
Average number of days on sick list for each patient	...	4.94	6.43	5.05
Average sick time to each resident	...	6.07	5.14	5.31
Total number invalided	...	4	4	1
Percentage of invaliding to total residents	...	0.36	.75	.24
Total deaths	...	4	1	3
Percentage of deaths to total residents	...	.72	.19	.71
Percentage of deaths to average number residents	...	.79	.21	.79

The most common diseases were:—

Malaria	...	105
Influenza	...	131
Diseases of the Respiratory System	...	16
Diseases of the Digestive System	...	16
Diseases of the Skin	...	14
Local Injuries	...	12

Medical Boards were held on four Asiatic Officials with the following results:—

(a) To be invalided out of service

Cerebral Thrombosis	...	1
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(b) To proceed on leave for treatment

Malaria	...	1
Neurasthenia	...	1

(c) To proceed on leave and continue treatment, and to be passed as fit before return.

Cerebral Thrombosis	...	1
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Deaths.—Three deaths occurred during the year.

Cerebral Hæmorrhage	...	1
Diabetes	...	1
Duodenal Ulcer	...	1

SECTION III.

HYGIENE AND SANITATION.

A. GENERAL REVIEW OF WORK DONE AND PROGRESS MADE.

(1) PREVENTIVE MEASURES.

(a) MOSQUITO OR INSECT-BORNE DISEASES.

Malaria.—The large number of cases of malaria dealt with at the Government hospital in Zanzibar during the past few years lead to the appointment of a Malaria Research Officer in 1934 whose duties were to investigate the incidence of malaria in the Protectorate, particularly with regard to townships, to determine the reason why malaria is prevalent and to advise on measure to improve the situation.

As a preliminary measure the splenic index amongst school children in Zanzibar Town was investigated, and the results compared with the last four years are set out below:—

1931	1932	1933	1934
57.7	47.4	47.9	47.5

A survey carried out amongst selected rural populations revealed a splenic index of 68 per cent with a parasite rate of 73 per cent and a gametocyte rate of 13 per cent.

Malaria is therefore of common occurrence in Zanzibar Island and it is certainly as prevalent in Pemba. So far as Zanzibar Town is concerned anopheline mosquitoes are rare except after the two rainy seasons. At this time they are common and breed extensively in large swamps lying to the east of the peninsular which forms the town. As they penetrate westward into the town they pass through extensive African locations lying just inside or outside the township boundaries where they become infected. Consequently the infectivity rate of the mosquitoes caught in the township varies from about three per cent to 14 per cent as the season progresses. Permanent breeding places for anopheline mosquitoes exist all the year round in swamps and small rivers situated in a rough semicircle at the East of Zanzibar Town and at a distance of one to two and half miles. When rains fall the low lying nature of the land inside the town boundaries causes water to stand for a considerable period, chiefly on the outskirts of the town, and wandering anophelines lay their eggs in such water and give rise to a seasonal influx of mosquitoes into the residential quarters.

The following recommendations for the control of malaria in the town are being made:—

- (i) Quarrying for rock and spoil within the township boundary and for two miles beyond to be prohibited.
- (ii) Keeping and grazing cattle in the town area to be prohibited.
- (iii) Formulation of schemes for the better drainage of low lying areas.
- (iv) Extension of the piped water supply to certain parts of the native town to allow shallow wells to be filled in.

All these matters will be considered during 1935 and will, no doubt, be followed at a later date by a more comprehensive scheme formulated by the Malarial Research Officer for dealing with the swampy areas and rivers outside the town boundary. As a routine measure at present all standing water in the town is oiled or sprayed with Paris green once a week. Regular inspections are made each week in every house and garden in the town area to discover mosquito breeding places which are dealt with summarily before breeding is established.

A. costalis is the most prevalent anopheline mosquito during and after the rains but *A. funestus* is also encountered and it is the latter which is found in the town during the dry season whenever any anopheline mosquitoes are caught.

In the townships of Pemba the problem of malaria is broadly of the same nature as that of Zanzibar. The Malarial Research Officer will extend his activities to embrace the towns there in due course and schemes will be put forward to deal with the situation. Meanwhile oil and Paris green are used extensively and regular cleaning of the bush, pools, ditches and swamps is undertaken as a routine.

In the country areas malaria is hyperendemic in the fertile western portion of Zanzibar and all over Pemba. This is due to the fact that both islands are lowlying and intersected with small ravines and swamps, all of which breed anopheline mosquitoes. The siting of native

rural dwellings or villages have not been controlled and it is often found that groups of houses are situated in the worst available place due to the natural desire of the people concerned to live near to the water they require and close to the fertile land which is found on the edges of swamps and valleys.

In a rural area inhabited by people who are mostly poor it is not to be expected that any campaign devoted towards the use of protective gauze netting in houses would meet with much success nor could directions to use mosquito nets over beds or to wear mosquito boots at night be obeyed. In consequence the only practical methods available to diminish the incidence of malaria amongst the rural population is propaganda directed towards the better siting of houses, whose construction in the main is good, and the general bonification of the people. The last involves close co-operation between every person and Government department concerned with the natives of the country. No single measure, medical or otherwise, alone will achieve the desired results which must come chiefly from more intensive agriculture better food and increased education, together with the provision of easily obtainable treatment during acute attacks of fever.

Filariasis.—504 cases of different manifestations of filariasis were reported during the year, mostly from Zanzibar Town. A side light on the prevalence of this disease is obtained from the following table which relates to the findings of the mosquito searchers employed in Zanzibar Town.

Number of times Larvæ were found in the Zanzibar township:—

		1931	1932	1933	1934
<i>Stegomyia</i>	...	3,327	3,298	2,388	2,793
<i>Culex</i>	...	815	873	544	601
<i>Anopheline</i>	...	55	179	38	164

As stated in previous reports, it seems improbable that the periodical infestation of houses by culicine mosquitoes can be avoided under present conditions. These mosquitoes breed freely in sullage pits, neglected gully traps and even in flooded cesspits. The number of these potential breeding places is large and the staff to seek them out is limited, and it is unlikely that their incidence or that of *stegomyia* mosquitoes can be much reduced unless very strong correctional measures can be taken against those householders who are convicted of repeatedly allowing domestic mosquitoes to breed on their premises. Oiling of all potential breeding places that can be discovered is carried out weekly and all premises are inspected weekly, but in a maze of buildings such as exists in Zanzibar, with waste water pipes discharging into gullies in most unlikely places,—even in some cases into unsuspected underground tunnels under premises,—control is difficult. In practice it is found that old and unsuspected breeding places come to light periodically and the bulk of the population are indifferent about new breeding places being created by their own deliberate acts of carelessness.

(b) EPIDEMIC DISEASES.

Plague has not occurred in Zanzibar in recent years though there was an outbreak in 1914. Rats are trapped regularly in the town and a percentage are examined daily for infection with *B. pestis* but, so far, with negative results. It is difficult to account for the absence of human and rodent plague. The black rat is plentiful and it is infested with *X. cheopis* so that the two vectors of the disease are available and it must be concluded, that Zanzibar has been singularly fortunate in that no infected rats or people have landed in the islands. It would be difficult, but not impossible, for infected rats to land from ocean going ships as they anchor in the bay but this does not apply to dhows which anchor in shallow water and at low tide lie on dry sand over which rats could pass with ease. Investigations are being undertaken with regard to the rat population of dhows with a view to insisting on some measure of deratization if the findings justify such a procedure.

Rat-proofing rules are not at present included in the town building regulations but it is hoped to include them when regulations are revised. Unfortunately new rules will have very little effect on existing buildings and many of the old type of houses are infested by large numbers of rats living in almost inaccessible positions. It has also been the custom, in the absence of any law to the contrary, to allow any variety of trade to be carried out in any part of the town. This has led to various rat attracting industries such as copra drying, maize grinding, bread baking and sweatmeat manufacturing being carried on in densely populated areas. The result, if plague were to be introduced into the town, might be disastrous and would lead to increased mortality and considerable interference with trade over a long period. In consequence, as a first step, action should be taken to control the activities of persons engaged

in rat attracting trades with a view to their ultimate limitation to such part or parts of the town where the risk of infection can be best guarded against and where, in the event of an outbreak, the least dislocation of trade generally would occur.

Leprosy.—Cases of leprosy were reported from every dispensary and hospital. So far as possible arrangements were made in each case either for home isolation, for transfer to the Funzi Island Leper Settlement or transfer to the Walezo poor house where burnt out lepers are cared for.

The number of lepers dealt with at Walezo was as follows:—

	Anæsthetic	Nodular	Total
Number in hospital on 1st January, 1934	... 32	2	34
.. of new cases admitted during, 1934	... 7	1	8
.. died	... 9	2	11
.. discharged	... 2	—	2
.. in hospital on 31st December, 1934	... 27	2	29

At Walezo the lepers are mostly "burnt out" cases looked after by the Sisters of the Roman Catholic Mission who are also in charge of the Poor House and Tuberculosis Settlement. On the whole these lepers live a very happy and contented life and they are allowed considerable liberty and personal freedom. It is found that they do not abscond but prefer to remain where they are kindly treated and are not objects of scorn or pity as they might be when living in the outer world. The more spacious settlement it is hoped to start will enable them to live an even more congenial life. An extension of this policy to lepers in general in place of the existing policy of rigid segregation at present in force was recommended and it is hoped that it may be possible to implement the suggestion next year.

The report on Funzi Island Leper Settlement which follows is by the Medical Officer, Wete, who is in charge.

"The movement of the leper population of Funzi during the year is shown in the following table:—

	M.	F.	Total
Number of lepers in Asylum on 1st January, 1934	... 71	22	93
Number of new cases admitted during 1934	... 12	3	15
Number of lepers re-admitted during 1934	... 1	—	1
Number of deaths in Asylum	... 11	1	12
Number paroled from Asylum as below :—			
To Walezo	... 2	—	2
To homes	... 3	1	4
Absconded	... —	—	—
Number remaining in Asylum at the beginning of 1935"	69	22	91

"It was not considered desirable to encourage requests for permission to go home for a short period, as no effective guarantee could be assured with respect to inmates associating with children in the home."

"Consideration was given during the year to the need for augmenting essential elements in the diet to which end co-operation was established with the Department of Agriculture whose representative in Pemba sketched a valuable plan for better cultivation of food crops by the lepers themselves, with material inducements to enlist their active interest. To the writer the principal need seems to be for more animal proteid and fat."

"A few cases of vitamin deficiency manifesting itself as the "anomalous beri-beri" syndrome which occurred even in patients whose diet was abundant in quantity, as their own resources permitted amplification of the ration. These did well on a full regime of milk (tinned), fish, chicken, eggs, vegetables, oranges and lemons, with cod-liver oil, marmite, and an iron and arsenic tonic."

"Eye affections, not specifically leprotic, are very common on Funzi. In the opinion of Dr. Welch, who usually accompanies me on my visits, their prevalence is higher than he has encountered elsewhere. Presuming, until elucidation by expert research, that these may also be more or less attributable to deficiency of such factors as vitamins A and D, cod liver oil is distributed lavishly."

"*Buildings.*—Repairs have been effected by the Public Works Department to the Mission Ladies' house and to several of the lepers' rooms in which the fragile "udongo" partitions had collapsed.

In the latter part of the year the prospect held out to the lepers of restoration to their native scenes and of the end of their remote insularity seems to have aroused the zest of

pleasant anticipation, and during the several visits of enquiry to ascertain their preferences for the future their eagerness to collaborate was revealing."

"This outline would be still less complete if no mention were made of the departure early in the year of that admirable combination, Miss Middleton and Miss Powell. They will remain inseparable in the memory of all patients and officials alike, who benefitted by their cheery devotion."

"The island was visited during the year by His Excellency the Acting British Resident, the Honourable Director of Medical Services, and the Honourable Acting Provincial Commissioner."

Tuberculosis.—The total number of cases of Tuberculosis reported from all causes was 202, with 50 deaths, of which 191 were of the pulmonary variety. There were, however, only 137 notifications of the disease and the discrepancy is due to the method of accounting for new cases at Government hospitals. Each unit returns the number of new cases dealt with but in the case of tuberculosis many of those who were notified were afterwards admitted to the tuberculosis wards at Walezo and were entered up as new cases there although most of them had been recorded already as new cases at institutions where they were first seen. As many of these people pass under several names, and not infrequently give false names and addresses, it would be impossible to sort out those who had been recorded as new cases on two separate occasions.

A special tuberculosis clinic was maintained, but a large number of the new cases discovered were dealt with amongst the ordinary hospital out patients; in the absence of a specially trained tuberculosis officer, whose engagement would not be justified in view of the small incidence of the disease, it appears that the need for a special clinic will gradually disappear. Special facilities will be given for tuberculosis patients attending hospital and special days and hours of attendance will be arranged as may be necessary.

The following procedure is followed in the case of patients presenting themselves for the first time with tuberculosis. When notified the contacts of the case, usually relations, are interviewed and persuaded to allow themselves to be examined by their own doctor or by the Medical Officer of Health. When this has been done attention is devoted to the home conditions of the patient. Houses are visited and suggestions put forward for bettering their living conditions. Indian patients are often found to be living under extremely poor circumstances and using dark and unventilated sleeping rooms. It is usual for Indians infected with tuberculosis to endeavour to return to India when possible but a few remain in Zanzibar. An endeavour is made, therefore, to require the owners of poor class house property in which a case of tuberculosis has occurred to improve it and so far it has been possible to have this done in every case. Other patients have been found willing to adopt new occupations and to live in the country under good conditions. The Africans or Arabs who become infected with tuberculosis must generally proceed ultimately to the tuberculosis huts at Walezo, where they are housed under conditions approximating to their homes but somewhat better, they are given a liberal diet and taught how to live in a way which will be likely to prolong their lives. This training is generally appreciated and it has been possible to discharge a number of them to their own homes where they have been willing to continue living in the way they were taught at Walezo.

Generally speaking tuberculosis in this Protectorate is a disease of towns and of Zanzibar town in particular. There is no evidence that it has spread very much in the country districts where the types of native houses in use are fairly well ventilated and airy. It is in the town slums that the disease is most commonly met with and the presence of tuberculosis is to be expected amongst persons living under conditions where neither sun nor fresh air can penetrate. Those living in the most crowded areas are generally the poorest and several may occupy one small room. Overcrowding must play in the dissemination of disease as well as undernourishment which is not uncommon amongst the poorer classes.

The question of the betterment of slum property in Zanzibar is receiving attention and as it is improved so it may be expected that the incidence of tuberculosis will become less. It is only by steady perseverance in this policy that lasting results of value can be produced as no other method, even immunization, has proved of much practical value in Zanzibar.

Enteric Fever.—Six cases of Typhoid fever and two of Paratyphoid were reported—all from Zanzibar Town—as compared with five and one respectively in 1933, yet the position with regard to this disease cannot be considered satisfactory. In Zanzibar town the water supplies are undoubtedly good, but the method of distribution of the water in the poorer and more congested areas leave much to be desired. Water is taken from public stand pipes and conveyed by professional water carriers in tins to those householders who have not water laid on their premises. The possibility of a typhoid carrier of uncleanly habits appearing amongst these water carriers

is a serious matter and it will be necessary to conduct a systematic examination of all water carriers in the future.

Milk, is almost always heavily contaminated with bacteria and the methods in which it is distributed are calculated to pollute it still further. It is fortunate that no epidemic have occurred as a "carrier" who happened to take up work in connexion with any of the milk supplies of the town could spread infection to a very large number of people, as few of the general consumers boil or pasteurize the milk they drink.

The risks of fly borne enteric in Zanzibar are also considerable but fortunately the efforts of the health department with regard to street cleaning have reduced the number of flies to a minimum. Flies cannot be eliminated entirely and some of the present methods of disposal of faeces are extremely dangerous; for example crude sewage is discharged freely into the basin of a tidal creek within a few yards of the market, where it may lie about for as long as 72 hours in unfavourable tides and afford ample opportunity for flies to visit and transmit infection to the food and vegetables sold nearby. By the end of the year proposals had been put forward for fitting mosquito gauze windows and doors to the main market buildings to prevent the ingress of flies; but this must be regarded as a temporary expedient, the final solution lying in the discontinuance of the use of the creek as an open sewer. The proposed addition of gauze netting will not affect the sellers of fruit and vegetables whose open stalls are situated nearer to the creek than the meat and fish market. An outbreak of typhoid might necessitate drastic action being taken with regard to these people and their produce.

Small-pox.—No cases of small-pox occurred in the islands during the year and no cases were introduced into the Protectorate although one shipload of passengers were quarantined on Quarantine Island on account of a case which had been landed at the Seychelles. The inhabitants of Zanzibar are always open to infection from without despite the strict enforcement of the law that no person may land unless recent vaccination scars can be shown or fresh vaccination is accepted. Dhows arrive at all times and anyone determined to avoid inspection before landing might do so at night in favourable circumstances. An intensive vaccination campaign had been started by the end of the year in Zanzibar town in order to anticipate such an eventuality and it is hoped that by the end of 1935 all the inhabitants not previously vaccinated will have had the operation performed.

The number of vaccinations carried out during the year were:—

	Total.
Zanzibar	9,547
Wete	5
Chake Chake	683
Mkoani	48
	<u>10,283</u>

Dysentery.—Dysentery appears to be largely seasonal in Zanzibar being a disease of dry weather. Very much the same conditions are encountered when dealing with it as are detailed under enteric and very much the same measures would improve the situation.

It is probable that the widespread habit—amongst Indians—of using one small room as a combined latrine, kitchen and bathroom cannot fail to have some bearing on the spread of dysentery and it is a matter of gratification that the numbers of cases remain so small.

Diphtheria.—Two cases of diphtheria were recorded during the year in one of which laboratory confirmation of the diagnosis was forthcoming. This is not the first occasion on which diphtheria has been reported in Zanzibar and in view of the position of the island as a centre for the East Coast and Indian traffic it is probable that other cases may occur in the future.

(c) Helminthic Diseases.

Ancylostomiasis.—The incidence of this disease during the last four years has been:—

1931	1932	1933	1934
13,459	13,941	12,481	12,577

There is no evidence that the disease is diminishing and there is a considerable volume of evidence to indicate that the true infection rate is over 80 per cent amongst the general native population. This evidence is derived from examinations of school children, prisoners and hospital patients. As elsewhere ancylostomiasis is protean in its manifestations and there can be little doubt that in the rural dispensaries the associated epigastric pains, dyspepsia, dropsy and chlorotic anæmia are very frequently recorded as separate entities instead of being considered as manifestations of the disease. In this way the incidence of ancylostomiasis appears to be less than it is in reality but there is some excuse for dispensers, unprovided with a

microscope, in failing to diagnose ancylostomiasis in persons who are apparently well nourished and whose only complaint may be epigastric pains.

It is a feature of *A. duodenale* infections in Zanzibar that many persons who are heavily infected with the worm appear quite well on casual inspection. This, however, is no more than an appearance because any attempt at performing really hard work is found to be exhausting and very few natives of Zanzibar can be found willing to undertake prolonged and arduous manual labour. Medical Officers expressed the view that whilst ancylostomiasis was not adequately represented in the annual returns yet it was probably one of the most important factors contributing to the general debility which is so common in Zanzibar.

In fact if ancylostomiasis could be eradicated from the Protectorate it is probable that a very large amount of concomitant sickness would disappear. On this assumption it would be logical to commence a widespread campaign for the use of pit latrines together with impervious stances, and to follow this up by the wholesale administration of appropriate helminthics. The Zanzibar peasant is, however, very conservative in his habits and superstitious to a degree. As an example the possession of a piece of faeces of an enemy, gives dreaded powers to the possessor, for it can be used to effect death or illness by witchcraft. So, in common with other personal waste products such as hair or nail parings, faeces are carefully hidden from possible enemies in the secrecy of the bush. But if a house latrine were used, a determined enemy would have little difficulty in obtaining excreta with the certainty that it emanated from his intended victim and could be used for his destruction. This is only one example of what the sanitarian is faced with, but it is sufficient to show that a lightning campaign for the use of latrines generally by the native population could not succeed, but that the custom can only be introduced slowly, with the rise of education amongst the masses and the gradual loss in the belief in the witchcraft.

The course most calculated to produce lasting results and the most economical if the least spectacular, is the steady dissemination of knowledge through the schools. Middle aged and elderly Africans find it hard to assimilate new ideas and the hope for the future lies in more and more education. Allied to this is the extensive use of propaganda illustrated by practical examples of what can be done by people to help themselves. As an object lesson it is intended to import some mechanical well borers and to use them to provide all buildings controlled by Government with adequate pit latrines fitted with impermeable cement stances. After this they will be lent out to village communities, as in Malaya, and efforts will be devoted to educating definite groups of villagers both how to avoid infection with ancylostomes and in the need for obtaining treatment once they are infected.

Schistosomiasis.—The reported incidence of *S. haematobium* infection during the last four years was:—

1931	1932	1933	1934
669	817	736	874

The increase in the number of cases recorded does not necessarily mean that the disease is increasing, although the vector, *Isidora ovidia*, is widely distributed. Most of the cases reported were from Pemba where a large population of the children in the schools were found infected. In Zanzibar infection is not very common. Systematic teaching of the people is again the most hopeful way of attaining elimination of the disease as its distribution is too scattered to allow of any special localized efforts being made to deal with the invertebrate host.

Ascariasis.—The incidence was:—

1931	1932	1933	1934
604	480	329	597

There is no indication that *A. lumbricoides* is confined specially to any one area of the Protectorate and cases were reported from all units.

(II) GENERAL MEASURES OF SANITATION.

(a) SEWAGE DISPOSAL.

In the usually accepted sense of the term no sewage disposal is attempted in the Protectorate—that is no sewage disposal works exist nor is any provision made for treating sewage, except at one or two public latrines and some houses in Zanzibar Town which are provided with septic tanks.

In the country districts of Pemba and Zanzibar pit latrines are in use in some instances, but more usually the surrounding bush or the sea shore is used. This aspect of rural life is dealt with in the section relating to ancylostomiasis.

In towns several systems are in use for the disposal of sewage. In some houses the Western system of water borne sewage has been adopted and the usual sanitary conveniences are fitted. Most commonly these water closets discharge into cesspits which are not provided with any arrangements for disposing of the overflow. Most of the cesspits in the towns are excavated in coral rock and it has been found in practice that some of them act as septic tanks with the added advantage of allowing the effluent to soak away. When this happens the system is very satisfactory. The majority of installations are not so satisfactory for when the ground is impervious cesspits overflow and constitute a public nuisance which can only be remedied by cleaning out the pit by pump or hand. Other cesspits allow subsoil water to percolate into them and overflow frequently, particularly during the rainy season. Some householders, too, use quantities of disinfectant with the result that all biological action is prevented and the pits fill up very frequently. In some houses, particularly in the Pemba stations the single bucket system of night soil disposal is in use. As a rule little nuisance has been caused by this practice as it is not adopted on a very large scale, but it is undesirable to encourage the continuance of such a method of disposal. More generally, and almost universally in the Asiatic and Arab urban dwellings, a variation of the cesspit system is in use. In the large stone built houses it has been customary to excavate a cesspit under the basement and to provide a masonry shaft or a six inch iron pipe from it to all stories of the house, so that a number of latrines in each house are in direct communication with the cesspit into which undiluted faeces and urine are discharged. As may be imagined there is a considerable nuisance from smell in all the houses employing this system which can only be regarded as permissible in default of any other practicable and inexpensive method of disposing of faeces. It is usual, for latrines of this type to be used as bath rooms and almost invariably in Indian houses food is cooked in the same room or in close proximity to it. In most African houses in the town, the single storey mud and wattle hut, the latrine is situated in a room of the house and discharges directly into the cesspit. In this type of pit flies and cockroaches may breed freely if the owner of the premises is unable, or neglects, to carry out preventive measures. The smell of the latrine is perhaps the most striking feature of many of these native huts and is the dominating characteristic of the poorer Indian dwellings. Finally there is variety of hut built out on poles over a portion of ground which is covered by the tide at high water. A hole is left in the floor and this edifice is used as a latrine. Faeces may, under unfavourable tidal circumstances, lie about on the foreshore for as long as 72 hours and often for 12 or 24 hours. But many persons even in the town use no latrines at all. Latrines for native servants are provided in very few of the houses in the residential portion of the stone town, that part which is occupied by the more affluent members of the community who are able to afford to employ servants, and in consequence, when a public latrine is not conveniently available it is a not unusual sight to see numbers of persons defaecating and urinating on the open beach, particularly after night fall. This practice has received the toleration accorded to old institutions in Zanzibar but it is evident that its continuance should not be countenanced and to this end recommendations have been put forward for the provision of additional public latrines in Zanzibar Town. These latrines will be available not only for Africans working as servants in the built up areas but, it is hoped, they will be used by those members of the Asiatic community who live in houses which are not adequately furnished with latrine accommodation.

A certain number of public latrines do exist, ten in all, but they are all small and they are insufficient to deal with the number of persons who should use them. They vary from the best modern type of cement buildings, provided with efficient septic tanks discharging an innocuous effluent into public drains, to others which differ only in construction from the variety described above where crude sewage is discharged on the foreshore.

In general the methods adopted for the disposal of sewage in the towns of the Protectorate are unsatisfactory and almost all the methods in use are of a makeshift nature, in most cases involving much periodical cleaning of cesspits with resultant nuisance. In the future the provision of a public water borne sewage system must be contemplated. The nature of the town makes it impossible for the septic tank system—the best system in practice at present—to be extended indefinitely because where septic tanks are most needed, in the congested Indian Bazaar area, there is no ground in which septic tanks could be built except in basements in public streets. But the primitive nature of most of the people concerned makes it a matter of speculation as to whether a universal water borne sewage system would operate satisfactorily. At the moment it is certain that only a proportion of the population could appreciate and use such a system.

Waste water in Zanzibar Town is discharged into sullage pits many of which allow their contents to percolate away. Many others do not and they are a prolific source of nuisance. When their covers are damaged, or left open, they cause a nuisance by their offensive smell. Trapped connexions are insisted upon but the general low appreciation of civic responsibility

leads many householders to permit their trapped gulleys to become choked with filth and to become a public nuisance.

Rain water in Zanzibar Town is discharged into public streets or, where it is collected in courtyards, it is led by pipes to the nearest road. Although in theory this method of allowing rain water to flow all over the roads would appear to be objectionable in the absence of road side drains, yet in practice periodical deluges do wash the surface of the roads in a very satisfactory manner; the flow is directed from the roads over gratings covering large closed drains leading to the sea and the roads are not covered by water for long periods. The system is primitive but on the whole not unsatisfactory.

(b) REFUSE DISPOSAL AND SCAVENGING.

In the country districts refuse may be just left to accumulate round houses, burnt or buried. Most often very little systematic refuse disposal is attempted and as a consequence the number of flies around native villages is excessive. In towns endeavours are made to force the inhabitants to acquire and use dustbins although the usual type of old oil drum generally provided is a nuisance in itself. The introduction of a strong type of sanitary dust bin with a cover for general use in towns will receive consideration but many of the people are so extremely poor that to be forced to spend money on a dust bin is apt to disturb their economic equilibrium very seriously. However in the more prosperous parts of the town an endeavour is being made to insist upon all householders providing themselves with dustbins.

However conserved, in old drums, in heaps or in old biscuit boxes refuse is collected in towns twice daily, and this work is undertaken directly by Government. The actual collection is carried out by a staff controlled by the Medical Officer of Health and because of the narrow nature of most of the streets and lanes, small hand carts are in general use. When filled they are pushed to various places such as quarries and depressions and their contents are dumped and covered with soil in the manner approved for "controlled tipping". Although the system may be expensive, in that the provision of more modern equipment might enable the same work to be done less expensively and the reduction of the two daily refuse collections to one might be possible if householders were provided with efficient and capacious rubbish bins, yet the work is carried out very efficiently. In view of the maze of small and complicated streets inhabited by very ignorant and careless people it may be stated confidently that the rubbish collection service of Zanzibar compares favourably with that of any other city of its size in the East. 38,500 tons of household refuse were collected in Zanzibar Town during 1934, most of which was of a vegetable nature and consequently of considerable bulk.

Scavenging is also undertaken by the Health Office staff and the streets are swept daily. All the land within the town boundaries is kept clear of bush and undergrowth, graveyards are maintained and drains are kept clear by the same staff.

A proportion of the refuse collected, 1,500 tons is dried and burnt to facilitate the incineration of other organic refuse, composed of condemned meat, offal, fish cleanings, animals, etc. in a Horsfall destructor. The remainder of the refuse is used to reclaim low lying land—in particular a series of quarries inside the town boundary and during the year a total of 37,000 tons of domestic refuse were disposed of in this way.

In addition about 1,500 tons of building refuse were removed and dumped by private persons, the Public Works Department and the Health Office during the year.

(III) SCHOOL HYGIENE.

A summary of the more common conditions noted by the officers who undertook the medical examination of school children during the year is given in the table below. A number of other conditions were recorded but they have not been tabulated because in many instances the examinations were of a rather cursory nature and no serious investigation into health conditions was attempted in Zanzibar. In Pemba more detailed surveys were carried out.

		Zanzibar Town.			Zanzibar	Pemba	Total.
		Asiatics.	Arabs.	Swahilis.	District Schools All races.	Schools All races.	
Number Examined	...	230	263	165	90	321	1,069
		%	%	%	%	%	%
Lack of Cleanliness	...	47	25	30	42	37	36
Poor Nutrition	...	6	4	2	3	7	5
Tonsils and Adenoids	...	52	41	42	49	28	40
Enlarged Spleen	...	12	40	29	41	43	33
Intestinal Parasites	...	7	6	12	27	47	19

Over half the children examined by the Dental Surgeon suffered from diseases of the teeth and gums, and his report is given below.

"It is difficult to classify the mouths seen as there seem to be so few children who can be considered as racially pure—i.e. pure bred Swahili, Arab or Indian—the majority being composed of persons showing every variety of racial gradation and no definite characteristics are to be seen which could be attributed to any one race.

Speaking generally, dentitions are good and the arches are excellent. Teeth are well formed and in many cases children stated to be twelve years old showed a complete dentition. It would appear that Zanzibar children are precocious and eruption is at an earlier age than that of Europeans. One child who was supposed to be four years old had his first permanent molars already erupted—but this must be regarded as very exceptional. Irregularities are common, chiefly due to long retained deciduous teeth; supernumerary teeth also are common amongst the more primitive peasantry who live in the southern end of Zanzibar Island amongst whom three mouths were seen which showed definite anthropoid tendencies i.e. teeth and arches. The children seen in Pemba Island appeared to be more prone to dental disease than those of Zanzibar—this statement must be qualified by the fact that not half the children of either island have been examined. The Girls Schools—the Arab Girls Schools in Zanzibar and Chake Chake—show a cleaner record than those of any one of the boy's schools."

"The chief cause of dental disease amongst school children is a lack of oral hygiene and although caries is fairly prevalent, gingivitis, pyorrhetic conditions and even stomatitic conditions predominate as a result of this neglect of oral cleanliness. In many mouths examined hours after the last meal a great deal of food debris was found still in the mouth, around necks of teeth and particularly in the interdental septa—this is chiefly the cause of the gingival troubles found."

"It will be some years before sufficient data are collected to enable any very definite conclusions to be arrived at regarding the dental conditions obtaining in the Protectorate, and additional difficulties are experienced because school children do not know their ages. But amongst the children who were examined at least 60 per cent suffered from dental defects. It was not common to find syphilitic lesions in the mouths, possibly, they were present in about 6 per cent of the children seen. One point of interest which was observed was that in the majority of mouths the oral cavity seemed fairly clean up to the age of 12-13 years—puberty—and after this age it appeared to deteriorate hygienically.

"To combat the lack of oral hygiene, which has been stressed as the cause of most of the diseased conditions seen, it is strongly recommended that a five minute "teeth cleaning parade" be held daily before school under strict supervision of masters. This would break down the soft calculus, so often found in children's mouth, which leads to formation of harder deposits which they do not appear to remove themselves."

These findings compare not unfavourably with those recorded for England and Wales in the Annual Report of the Chief Medical Officer for the Board of Education for the year 1933 where 68 per cent of the children examined required dental treatment.

The Dental Surgeon stresses the fact that most of the diseased conditions met with are capable of being prevented and the advice he gives will be communicated to the education authorities, with the recommendation that systematic propaganda against dirty mouths should form part of the curriculum of every school under Government control. Similar communications will be addressed to the governing bodies of all other educational institutions.

Furthermore the Dental Surgeon, in co-operation with the Medical Officer in charge School Medical Services, has prepared a scheme for the systematic examinations and treatment of all school children in the Protectorate and in addition he has arranged to reserve one hour each day entirely for dealing with native cases coming from schools or from Government offices.

The number of children noted as suffering from poor nutrition, 5 per cent, is surprisingly low when the circumstances under which they live are borne in mind. The English rate, 11 per thousand, is considerably lower, but the difference is less than might have been expected.

Lack of cleanliness appears to be common in all schools despite the inclusion of hygiene in the Government syllabus. The African is more likely to improve in cleanliness if attention is drawn to his individual shortcomings rather than to the theoretical desirability of keeping himself clean, and it is desirable that particular attention should be paid to this matter in the Teachers Training School where at present the standard of cleanliness is not markedly better than amongst the remainder. The rate for England and Wales is four per cent compared with 36 per cent for Zanzibar.

Enlarged tonsils and adenoids and septic throats seem to be general. The part played by the tonsils in combatting infection has received more attention of late and the view is now generally held that an enlarged tonsil is not necessarily indicative of disease in the tonsil, but that this is more usually a sign that its normal function is being exercised. This being the case the condition does not appear to require any urgent steps being taken to deal with it until such time as the results of increased oral hygiene on existing oral sepsis become evident. In England and Wales the adenoid and tonsil rate was only 16 per thousand in 1933, compared with 40 per cent for Zanzibar.

The evidence that enlarged spleens are present in most children is convincing and corresponds with the findings of the Malarial Research Officer, that the splenic index in one of the country areas, characteristic of most of rural Zanzibar, was 67 per cent. This index is to be expected in tropical school children living in areas where malaria is hyperendemic and where few precautions are taken, or are practicable, against infection; but it is of interest to find that the index is very much the same for town children—except Indians—as for those living in the country. As Zanzibar Town is believed to be free from malaria for most of the year this result is unexpected and particular attention will be paid to verification of these results during the next annual examination. It is probable that it will never be possible to eliminate malaria from amongst the children in the rural districts of Zanzibar and all that can be done is to encourage any schemes likely to assist children to establish a tolerance to the malarial parasites at as early a date as possible and without suffering any permanent physical deterioration.

The rate of infestation by intestinal parasites appears to vary considerably in different schools. The variation may be due in Zanzibar Island to the fact that the children in the schools in the town are subjected to treatment periodically whereas little has been done for country schools, such as Mkwajuni, where the rate is 40—60 per cent. In the Chake Chake district schools in Pemba the higher number demonstrated as harbouring intestinal parasites, chiefly *ancylostomes*, resulted from the technique adopted by the Medical Officer who made the examinations personally and who was able to examine several specimens from individuals before recording them as free from infection.

Towards the end of the year a small series of school children were specially dealt with on account of the prevalence amongst them of signs suggestive of congenital syphilis. This percentage appeared clinically to be in the neighbourhood of 10 to 20 and all the usual signs could be demonstrated. Bloods were collected accordingly from 40 pupils at the U.M.C.A. Mission school in Zanzibar Town and it was found that four gave a positive Kahn reaction and one blood was doubtful but suspicious. The children in this school are regularly attended by a private doctor and as the standards expected of them are high the percentage of positive Kahns will probably be on the low side of whatever may be the "normal". This supposition received support from the results obtained from 19 bloods collected from the children in the Government Central School in Zanzibar when three were positive and one blood was doubtful. The combined figures of the town schools was therefore:

59 examined, 7 Kahn positives, 2 doubtful, 50 negative.

Three country schools were examined and in all 29 bloods were dealt with. The figures resulting were:

29 examined, 3 Kahn positive, 1 doubtful, 25 negative.

These findings relate to such a small number that it would be unfair to draw any but very general inferences from them but the findings of medical officers, the dental surgeon, and the results of the serum test all indicate that a twentieth to a tenth of the small number of children examined suffered from congenital syphilis, and it is thus considered desirable to continue the investigation with a view to introducing effective treatment for those found to be suffering from this disease.

In Pemba clinical schistosomiasis was almost universally present amongst the school children and the Medical Officer at Chake Chake considered that few children can escape the disease. Except near certain known foci of infection schistosomiasis is not so prevalent in Zanzibar, but few facts are available on which to base an opinion, as examination of the urine of all school children has not been carried out as a routine. Investigations into the infection rate of this disease will be made in 1935.

The special school clinic for Zanzibar Town schools was open throughout the year. All sick school children were seen there daily by a Sub-Assistant Surgeon and minor ailments were dealt with, serious complaints being referred to hospital for treatment. During the year 4,039 new cases were seen and 7,633 re-attendances were recorded, giving an average daily attendance of about 38, which is not unduly high as children from all the Zanzibar schools attended the clinic

which is not reserved for the pupils of Government schools alone. Most of the complaints dealt with were minor injuries, constipation, dental caries, and digestive troubles.

It will be seen from the above that the health of the Protectorate schools children leaves much to be desired. Economic reasons make it impossible to attempt to attain the English standard, but even so, much can be done within our resources. It is hoped that in future every child in Government schools in the Protectorate will be examined at least once during the year by an European Medical Officer and the Dental Surgeon. Sufferers from helminthiasis, dental caries, congenital syphilis or yaws can then be given appropriate treatment. This with continued insistence upon personal cleanliness and oral hygiene should not be beyond the financial resources of the Protectorate, and should result in considerable improvement in the general health of the children. The question of providing additional meals, particularly milk, for those suffering from under-nourishment, will be explored.

The development of the School Medical Service in Zanzibar is doubly important, because there is no child welfare service, nor is there any probability of inaugurating one on a broad front until literate women are available to undertake the work, and this is not likely to be the case for many years to come. If we are to exert any influence over the children, the schools at present are the most hopeful channels, and the service should be developed even, if necessary, at the expense of other activities of the department.

(IV) HOUSING AND TOWN PLANNING.

The majority of the population of the Protectorate live in the country districts in houses of native construction of a type that experience has found most suited to the country. These houses are oblong, with mud walls and plaited palm leaf roofs. Usually the rooms are of a reasonable size and they are kept clean; in fact the houses used in rural districts by most of the Africans and poorer Arabs are of a relatively high standard of construction and they are cool. In certain areas, notably the East Coast of Zanzibar, the more common pole and mud hut is replaced by one made of coral and locally prepared lime as these materials are most readily available. Bodies of clove pickers in the season moving from estate to estate, are housed in low sheds made of palm fibre mats as a temporary measure; these sheds are satisfactory and suitable for this purpose.

It is usual for most householders to enclose a small yard at the back of their houses, in which the kitchen and store room are situated and sometimes, amongst the more advanced, a latrine. So on the whole the housing problem does not press hardly on the country people as houses are cheap to build, material is always at hand and they are fairly durable and waterproof when kept in good condition.

In the smaller townships in Zanzibar, housing conditions present few objectionable features, and provided that new buildings are erected in accordance with a controlled plan and old ones kept in repair it should be possible to maintain a relatively high standard.

But in the township of Zanzibar itself the position is more complicated. One part of the town is mainly occupied by Indians, Arabs and Europeans and here the houses are built in permanent material, i.e. coral walls and iron or tiled roofs.

The congestion particularly in the poorer quarters of this area is remarkable in a town which has only been in existence for about a hundred years. Narrow lanes varying from two feet to ten feet wide intersect blocks of tall stone houses which are built either semi-detached or, more usually, detached but within 18 inches or two feet of each other. This has resulted from an entire absence of any scheme of town planning in the past when owners of property built over their plots in whatever way seemed best to them, very frequently encroaching on any public or waste ground available. In consequence, apart from those houses built on one or two modern roads, houses may front on a road or on the back yard or side wall of a neighbour.

The situation now exists therefore that the "stone" part of Zanzibar is densely covered with houses and a number of temporary huts are dotted about amongst them. In the stone houses the rooms are usually high but generally they are dark and very often dirty. The houses of the Europeans, and the better class Arabs and Asiatics are clean, but those occupied by the poorer class of Indian are kept in very bad condition. Despite the fact that many of the houses these people live in could be converted into reasonable dwellings, yet they are made by their inhabitants into such squalid and filthy tenements that many of them must be regarded as unfit for human habitation.

In the suburban areas of the town African dwellings are spread over the country. In places where recent development has taken place they are arranged in an orderly way and a sufficient number of streets and sanitary lanes have been laid out, but in the older parts conditions

resemble those of the "stone town", as no order or method was observed in the siting of dwellings. Many houses are situated in deep pits—the sites of old quarries, and amongst banana groves, and all are inextricably mixed together. But one saving grace is that almost all of the African houses are kept clean, and indeed the standard of cleanliness maintained, both personal and in the house, is remarkably high and it contrasts very favourably with the insanitary conditions that prevail in the small Indian shops and dwellings scattered about the native quarters.

Zanzibar town covers an area of nearly $2\frac{1}{2}$ square miles and the population is estimated to be in the neighbourhood of 45,000. 3,300 houses and 8,400 huts of various sorts are in use. It will be realized, therefore, that although housing conditions in the town area are not entirely satisfactory it may be many years before any very substantial improvements can be expected.

Recent legislation has prescribed minimum standards for certain types of business premises, bakeries, dairies, etc. and rules can now be applied to "houses let in lodgings". The Town Decree also lays down certain requirements for all buildings used as dwellings. In consequence of this a general sanitary survey of the town is being undertaken. It cannot be systematic—that is street by street since so many very bad properties demand immediate attention. The plan adopted is for the Sanitary Inspectors in charge of the various sub-districts of the town to submit a list of the most insanitary dwellings and business premises in their areas. These are then surveyed in detail and such measures as are appropriate are enforced. Owners of insanitary property are served with notice to effect necessary repairs and improvements under the Public Health Decree and, in conjunction with the Director of Public Works and Electricity (the joint building authority with the Director of Medical Services) structural desiderata are indicated and their implementation enforced by law when necessary.

A more difficult problem is that of dealing with dwellings of such a very poor quality or which are so seriously dilapidated that their repairs would cost more than they are worth. When these erections are situated on Government land it is often practicable to terminate the lease or to offer alternative accommodation free of rent if the tenant will move voluntarily. On private land it is usually necessary for Government to acquire the property and to demolish it later because the present law does not permit of a "demolition order" of the usual European type being obtained and applied. The cleaning up of slum property is thus seriously handicapped by financial considerations but what it is possible to do with limited funds is being done.

A more serious handicap to the efforts made to deal with the slums of Zanzibar is the natural reluctance of property owners to incur heavy expenditure. This attitude is not unknown in England amongst owners of poor class property and in time, no doubt, the more vigorous opponents of the new ideas will come to find that timely improvements to sub-grade property are an economy as well as an aid to the health of the country.

The problems of Pemba are very similar to those of Zanzibar. In the townships of Chake Chake and Wete, but particularly in the former the conditions are similar to those obtaining in Zanzibar township, but on a smaller scale, whilst the condition in rural areas are, as in Zanzibar, not altogether unsatisfactory.

(V) FOOD IN RELATION TO HEALTH AND DISEASE.

In the report of the Medical Department for 1933 stress was laid on the fact that a condition approximating to beri-beri had been found to be fairly widespread amongst certain villagers on the East Coast of Zanzibar. A few cases of pellagra, beri-beri and rickets have been reported annually in the past, but it is generally recognized that the figures given do not represent the true incidence of these diseases, partly because the people most affected live in remote districts to the East of the island and do not present themselves for treatment and partly on account of the fact that in the case of those attending rural dispensaries the condition would not be recognizable to the attendant in charge.

In the absence, therefore, of reliable figures, other than those supplied from the four hospitals, it is only possible to record the opinions of those most likely to be aware of the extent of food deficiency in Zanzibar and Pemba.

The Medical Officer whose findings were quoted in the Annual Report for 1933 visited certain of the East Coast villages again and reported that definite signs of avitaminosis were still common, that is night blindness, various types of parasthesia and vague bodily pains. A consideration of the diet of these people brought to light the fact that they live for some months in the year almost entirely on fully milled rice and such fish as they catch and they are able to make few additions to this fare and appear to be living in a state of bordering on starvation at times. The cause of this restricted dietary is largely a matter of economies, the infertility of the soil and the depredations of wild pigs. Suggestions have been made to deal with some of these problems and the question of assisting the East Coast inhabitants in various ways, notably by building access

roads to allow fish to be exported and other foodstuffs to be imported, is now engaging the attention of Government.

Attention was drawn to this matter by the recognition of a condition resembling sub-acute beri-beri or generalized avitaminosis amongst both the long and short term prisoners in Zanzibar gaol. A prison dietary poor in protein, fats and vitamins no doubt accounted for the condition in certain of the long term prisoners but its appearance amongst the short term men indicated that the normal dietary of certain of the peasantry must also be lacking in these principles. The steps which are being taken to rectify this state of affairs as far as the prisoners are concerned are referred to later.

The Medical Officer in charge of the leper settlement on Funzi Island also reported a condition amongst the lepers which he described as the "anomalous beri-beri syndrome" and which disappeared when suitable additions were made to the dietary.

An investigation was carried out by Dr. W. Harden Smith to determine what was the composition of the diet of the indigenous Africans and he concluded:

"Further study of the local diets is required, but from figures presented, and remembering that there are many people in the town and districts who cannot afford the cheapest of the diets analysed, it is evident that in all probability the consumption of Vitamins A and B is insufficient.

This conclusion was based on a detailed consideration of the food normally consumed by several groups of persons; one mostly composed of "middle" class Government employees living in Zanzibar with salaries ranging from £1-10-0 to £4-0-0 a month, and another embracing a rather poorer class of peasants who happen to live in a particularly fertile area. The basis of all the diets was rice, cassava, sweet potato, banana, coconuts or grain with the addition of varying amounts of fish, meat, ghee, vegetables and sugar. The more affluent used white-bread and delicacies such as dried shark, tinned milk, chicken and dates when they were able to afford them.

A very rough approximation of the chemical composition of the diets of these people is tabulated, but in the absence of any accurate analysis of local products it cannot be more than approximately correct, since so much of the data is derived from analysis of similar foodstuffs in other countries.

		Total Protein	Total fat	Carbohydrates	Approximate Daily Caloric Value of diet
Country dwellers (poor class)	...	60 grammes	90 grammes	480 grammes	2,900
Poorest group of Town dwellers	...	70 ..	40 ..	460 ..	2,400
Middle Class Government Employees	...	130 ..	130 ..	745 ..	3,800

This table indicates the possibility of the caloric intake being on the border line of insufficiency for the poorer people, but as it is certain that an unascertainable quantity of supplementary foodstuffs is consumed no definite conclusion can be drawn.

Half the protein content of all the diets is obtained from rice and wheat flour, and it is generally considered that double the quantity of protein from these sources is necessary as compared with protein derived from animal sources. The protein intake is probably therefore on the low side in the dietaries of both the poorer classes. The total fat content of the lower grade diets is also low and the amount of animal fat available is very low indeed. The carbohydrate intake is probably sufficient, as it is with most native races encountered.

It seems probable that there is a deficiency in Vitamin A and B in the dietaries of the poorer classes since relatively small amounts of fresh vegetables and very small quantities of animal fats are eaten, particularly by town and East Coast dwellers.

Dr. Smith considered that the above dietetic insufficiencies could be dealt with by measures calculated to increase and cheapen local supplies of meat, fish, ghee, milk and eggs. This is correct, but unfortunately Zanzibar, in common with most agricultural countries, has not escaped the effects of the economic depression experienced during recent years. The prices of the chief exports, cloves and copra, have dropped several hundred per cent and the result is that there is very much less money circulating in Zanzibar than in the past. In consequence the general population, outside the towns, is compelled to depend to a greater extent on the produce of their land and it is exceptional for meat, milk, eggs and ghee to be produced for "home" consumption as all these articles fetch good prices in any of the townships and few of the producers can afford to consume them. Therefore, until a knowledge of more efficient methods in agriculture and animal husbandry is more widely spread, there can be little hope of any substantial alteration in the type and quality of the food eaten by the people. Some amelioration of conditions might result from the increased consumption of rice locally grown and prepared in place of the fully milled imported article. The most rapid method of bringing this about would be arbitrary limitation of the amount imported.

Milk.—Particular attention was paid during the year to milk supplies of Zanzibar Town. Chemical examination of milks over the years 1932 to 1934 showed their average fat content to be 4.04 per cent, and average total solids 12.95 per cent.

Most of the samples dealt with during the year under review were up to this standard and they showed no evidence of adulteration except in two cases, both of which led to prosecutions.

The bacteriological examinations of milk gave less satisfactory results and in those samples which were a few hours old, and ready for retail, counts of 17 and 19 million colonies of bacteria per c.c. were made whilst, in fresh milk bacterial counts varied between one and $7\frac{1}{2}$ million colonies per c.c. That this state of affairs is largely due to faulty methods and the use of dirty vessels is indicated by the fact that specimens of milk taken under controlled conditions and supervision, in a typical cow byre, gave counts of 10,000 to 75,000 colonies per c.c. immediately after milking. It is hoped that it will be possible to raise the general standard of milk cleanliness in the future by the dissemination of propaganda, by the detailed inspection of all dairies and milk shops and the enforcement of the minimum standards of cleanliness which are laid down in recent legislation.

Water.—The water supply for Zanzibar Town has maintained its usual high standard throughout the year. It is derived from two series of springs situated some miles out of the town and it is delivered by gravity to a low pressure system of supply pipes in the town. It is intended during 1935 to supply water by means of a high pressure system and advantage has been taken of these forthcoming alterations to arrange for the introduction of a chlorinating plant in the system. Up to the present the water has been delivered unfiltered and untreated, and there is no reason to alter this arrangement since the water supply is one of the purest in Africa. But the introduction of a chlorine plant was asked for so that in the event of contamination taking place the water supply should be chlorinated at once; with a population of the size of Zanzibar, largely composed of primitive people, it would be inadvisable to depend on private persons either filtering or boiling water even when advised to do so in the face of serious pollution. The supplies for the larger township in Pemba are also reasonably satisfactory; that at Chake Chake is pumped from springs and since June was chlorinated with satisfactory results; at Wete water is pumped from springs but it is untreated. Mkoani depends mainly on rain water. The smaller townships in Zanzibar depend partly on rain water and partly on wells.

In the rural districts of Zanzibar and Pemba water supplies are generally of a fair good quality when they are derived from deep wells—but these are not always conveniently situated for the present distribution of the population, and few new ones are being constructed on account of the cost of building a well which may have to be as much as 70 feet deep.

Smaller springs and seepages are used where they occur and, when situated in places where they are not subject to gross pollution, they are sufficiently satisfactory.

Water supplies derived from swamps are much less satisfactory and one consequence of the use of such contaminated supplies is the presence of schistosomiasis.

Generally, however, both Zanzibar and Pemba remain remarkably free from diseases associated with water but this is a state of affairs which cannot be relied upon to continue indefinitely.

Meat.—The meat supply of the Protectorate towns is only reasonably good. All slaughtering for the market takes place in slaughter houses and the animals and meat are inspected by officers of the Veterinary Department or by sanitary inspectors. A certain amount of slaughtering for ritualistic purposes is permitted on private premises but the number of beasts so slaughtered is not large. As an indication of the size of the trade the following figures are quoted from the Veterinary report concerning the Zanzibar slaughter house.

		Oxen	Cows	Calves	Goats	Sheep
Slaughtered during 1934	...	1,883	640	115	10,609	1,602
Partially condemned	...	1,222	8	—	2,373	654
Wholly condemned	...	18	14	—	16	10

The chief cause of the entire condemnation of carcasses by the Veterinary Officer were the presence of extreme emaciation or extensive contusions. Portions of carcasses were condemned on account of measles, flukes, contusions and other infections.

In the districts animals are slaughtered when necessary and, as a rule, no inspection is practicable. The impression is gained in Zanzibar Island at least, that the number of animals slaughtered in the district is not great as comparatively few wayside meat selling booths which are such a feature of many mainland districts, are seen in Zanzibar; in the clove picking season in Pemba, however, a large number of animals are slaughtered for the labour employed on the picking. It would be an advantage to the health of the people if more meat were consumed and methods to achieve this object are under consideration.

The enforcement of certain rules made under the Public Health Decree of 1929—meat marketing, control of bakehouse, dairies, etc. has meant that rather more attention has been paid to the conditions under which food was handled. In consequence many recommendations for improvement in the market, slaughter house, etc. were made during the year and premises where food was prepared, sold or distributed were inspected as often as possible.

Since the beginning of 1934 all eating houses, bakeries, etc. are required to be licensed and before obtaining such a licence to have satisfied the health authority that their premises and staff are suitable for the work it is proposed to undertake. Sanitary surveys carried out as a result of this legislation have revealed the presence of certain very serious defects, particularly in eating houses. It will be some years before all the premises, even in Zanzibar Town, which are concerned with food are brought up to a reasonable standard of cleanliness and the resentment of even enlightened property owners towards the enforcement of improvements, and the amazing apathy and lack of interest of those who consume food produced under filthy conditions constitute a very definite hindrance to the efficient enforcement of the law.

B. MEASURES TAKEN TO SPREAD THE KNOWLEDGE OF HYGIENE AND SANITATION.

In all Government controlled schools hygiene is taught as a regular part of the curriculum. Text books on the subject are available in Swahili and the students of the higher grades are expected to have a fairly comprehensive knowledge of the elements of the subject. But as in the case of many practical subjects learned as theory it is not evident that this teaching of hygiene has been productive of as good results as might be wished because over a third of the children examined by medical officers in this and previous years have been recorded as definitely unclean and this state of affairs was not confined to the more remote village schools. Furthermore, it will be seen from the report of the dental surgeon that almost all of the dental disease amongst school children, of whom over 60 per cent are affected, is due to the dirty state in which the children keep their mouths. In this connexion, it was observed that a number of children attending Government schools were found to be unvaccinated. These three examples, make it clear that if the teaching of hygiene to children is to achieve any results it requires to be imparted in a practical way and made to apply to everyday life.

So far as the general population is concerned little action has been taken to spread a knowledge of hygiene and sanitation. At each rural dispensary, of which there are 16 in Zanzibar, and eight in Pemba, the dispenser in charge is expected to do what he can to explain simple methods of sanitation to the surrounding population. These dispensers however are often ignorant of even an elementary knowledge of the subject and their efforts are often of little value, except in the case of one or two whose natural common sense has enabled them to rise superior to a lack of knowledge, and to lay down simple rules for health and to endeavour to insist on their enforcement.

The absence of tribal organization amongst the Africans makes it difficult to disseminate a knowledge of hygiene and sanitation to the general native population and, as illiteracy is usual, teaching can only be imparted by the spoken word or by example and, of the two, example would appear to offer the greatest chance of success. The spread of such knowledge must of necessity be slow.

It is therefore proposed to post Sanitary Inspectors to as many of the counties (Mudiria) of Zanzibar as possible. These men, though mostly of Indian extraction are locally domiciled and are able to speak the language of the country people. Their duties will be to endeavour to point out the villagers what is required to make living conditions more healthy and how to avoid the propagation of disease. By the end of the year a detailed programme of work to be carried out had been compiled, and one Sanitary Inspector had been posted to a rural area. This system is admittedly somewhat clumsy and expensive but it appears to be the only way in which practical teaching can be made to reach the persons for whom it is intended. In any case it is the only way in which the carrying out of theoretical teaching can be enforced. On the success or failure of this first assay will depend the future steps to be taken in the country districts to spread a knowledge of practical hygiene. In the meantime the two medical officers in charge of the rural areas in Zanzibar have been instructed to lose no opportunity of addressing gatherings on hygiene or of demonstrating what is required in a practical way.

In the towns, Zanzibar particularly, elementary hygiene and sanitation are learnt in a hard school. Persons wishing to build a house must do so in accordance with an approved plan and ventilation and accessibility are insisted upon. Latrines and separate kitchens must be provided and only a portion of a building plot can be built over: refuse must be conserved and premises kept clean under pain of court proceedings.

In general there exists amongst the people no appreciation of matters pertaining to public health. By comparison with more advanced primitive peoples elsewhere their outlook is very restricted and their knowledge, or even curiosity, regarding matters of health is small. The slave mentality persists, and stands as a bar against social and hygienic advancement. Enlightenment will come with the development of a "community" sense. This is in its infancy at present, but until it is established advancement must of necessity be slow.

C. TRAINING OF SANITARY PERSONNEL.

Qualified Sanitary Inspectors, who are mostly locally domiciled Indians with Indian qualifications, are employed in the townships of the Protectorate under the control of an European Sanitary Superintendent in Zanzibar and of the Medical Officers concerned in Pemba. Under them is a corps of natives who perform such work as searching for mosquito larvæ, oiling breeding places, trapping rats, setting fly traps, vaccinating, supervising refuse disposal and carrying out any other work of a sanitary nature required of them. These people cannot be regarded as trained in the broad sense. Each is a specialist shown how to do one simple piece of work without knowing the reason for doing it. Within the limits of their specialities they are remarkably efficient and devoted to their work but they cannot be regarded as trained, nor does there exist any organization which would allow training to be undertaken at present. The training of sanitary personnel must await the inauguration of a general scheme for the training of all native technical or professional employees of the medical department, and is dependent upon literate natives being available for such training and employment. At present the number who have reached an educational stage which would allow them to benefit by training is extremely limited. Any advance in the educational standard of medical and sanitary native personnel is dependent upon an advance of the general educational standards of the natives as whole.

SECTION IV.

PORT HEALTH WORK AND ADMINISTRATION.

The only port in the Protectorate concerned with foreign shipping is Zanzibar, and all ships from overseas must call at Zanzibar to obtain pratique before visiting any other port. During the year 547 ships and 717 dhows arrived in the harbour, 12,778 immigrants were landed and 13,491 emigrants embarked.

During April one ship arrived from India which had landed cases of small-pox at the Seychelles. 459 passengers were placed in quarantine and 31 were allowed to proceed to their homes under surveillance; 103 persons showing no signs of previous vaccination were vaccinated and there was no spread of the disease on the Quarantine Island or elsewhere.

Later in the year two Japanese ships were granted restricted pratique because of outbreaks on board of a severe type of measles. One case of typhoid was landed and subsequently died, but there was no epidemic of the disease on the ship concerned.

Since the conference held in Capetown, in 1932, at the instigation of the League of Nations, attempts have been made to simplify the procedure relating to the granting of pratique and to devise a system which would be acceptable to all British possessions in East Africa. The complexity of the interests involved prevented the framing of any reciprocal legislation and consideration of the question was postponed. The old routine continued to be carried out, whereby ships known not to have touched at infected ports, or to have any cases of infectious disease on board, were boarded by a Port Medical Officer and pratique granted after scrutinization of the Bill of Health, the "Ships Health Declaration", and the carrying out of any investigations found necessary. This routine was cumbersome and accordingly a set of rules was drafted, under the Quarantine Decree, to enable pratique to be granted automatically to all ships which have received recent pratique in any other East African Port. Other ships which have not called at any other East African Ports before arriving at Zanzibar but whose sanitary guarantees are satisfactory will also be given automatic pratique. In fact a Medical Officer in future will only board ships and examine passengers where there is some definite indication that such a procedure is necessary. This will result in a very great saving of the Port Health Officer's time, as nearly all ships arriving at Zanzibar have received pratique a day or two before at Dar-es-Salaam, Tanga or Mombasa.

The dhow traffic provides certain difficulties as the owners of such craft are ignorant of the law and would be unlikely to observe it even if they were not. Therefore all dhows arriving in harbour are boarded and the crews examined for the presence of infectious disease. No cases of infectious diseases were discovered amongst dhow crews or passengers during the year.

The law provides for the compulsory vaccination of all persons landing at Zanzibar and this is applied to all dhow crews and passengers and to all 3rd class steamship passengers, first and second class passengers being kept under surveillance when necessary. A total of 3,015 vaccinations were performed during the year on persons arriving by sea. Attempts have been made to arrange for the reciprocal recognition of vaccination certificates issued by the Medical Officers of Health in India and elsewhere but the ingenuity of those most concerned, Indian immigrants, has made any such arrangements impracticable. Vaccination certificates have a cash value, apparently, as numbers of Indian immigrants arrive who show no signs of vaccination and who hold recent certificates of vaccination and admit to having purchased them. In consequence only certificates issued by the Port Health Officer or Medical Officer of Health of Dar-es-Salaam and Mombasa are now accepted in Zanzibar. Apart from this the only evidence of vaccination which is accepted is the presence of a satisfactory scar; persons who are unable to produce this evidence of vaccination are vaccinated on board before they are allowed to land.

The International Convention relating to air craft was ratified for Zanzibar during the year.

SECTION V.

MATERNITY AND CHILD WELFARE.

Whilst there are no Government institutions devoted primarily to maternity and child welfare work, such work has been undertaken by the Zanzibar Maternity Association which has been intimately associated with Government from the time of its inauguration. The Association was formed in 1918 under the patronage of His Highness the Sultan of Zanzibar and the British Resident, with the Principal Medical Officer as President, the Director of Education as Honorary Secretary, the Assistant Auditor as Honorary Treasurer, and the Administrator-General, representing the Wakf Commissioners, as a member of Committee. Subsidies were then paid to the Association by both Government and the Wakf Commissioners, and in so far as Government is concerned, have continued to be paid to the present day, whilst the office holders of the committee are still Government officials. The relationship between Government and the Association has therefore been intimate from the beginning and still is.

The aims of the Association were to provide an efficient Maternity Service at reasonable cost to the various interested Arab and Asiatic communities and to extend the benefits of such a service to the general native population of the town and to such others as could not afford the usual fees. The intentions of the Association were thus partly utilitarian and partly charitable from the beginning. In 1925 the present Maternity Home at Mwembeladu was built on land provided by Government from funds donated by the Wakf Commissioners assisted by Government, and was furnished and equipped by a prominent member of the Indian Community. It was intended for the use of poor Arabs and Swahilis, and provided a long felt want and continues to do so to this day. Last year the Association extended its charitable activities by opening a number of rural maternity homes staffed by native women trained during the previous year at Mwembeladu. The facts that the women chosen for training were all illiterate, there being no literate native women available, that the facilities for training were not entirely adequate, and that the period of training was of necessity short as most of the women were married and could not be parted from their husbands for too long, all militated against the success of this scheme, and by the end of the year it was apparent that not only were these centres with one exception indifferently made use of by the natives, but that the women in charge were not competent to afford the assistance that might reasonably be expected of them in the position they held. The Association decided to request Government to take over their rural activities and this was agreed upon to take effect from the beginning of 1935.

The headquarters of the Association is at Mwembeladu. Maternity Home, where Miss Locket, the matron midwife of the Association, resides and directs the activities of the home, assisted by an Arab and two Goan midwives, all locally trained and certificated. In the first part of the year there were two general dispensaries on the ground floor of the building, one in the charge of a native dispenser employed by Government, and the other under the care of Miss Locket and her staff. The first was intended for men and the second for women and children, but as a large number of the men showed an undoubted preference for Miss Locket's clinic the dispenser was withdrawn towards the end of the year, and the two dispensaries were made into one under the charge of Miss Locket on behalf of Government.

Three midwives, a Eurasian and a Hindu both with Indian qualifications, and an Arab with local qualifications are employed by the Association under the general charge of Miss Locket and visit the homes of members of subscribing communities as called upon.

A summary of the activities of the Association is given below:

I. MWEMBELADU MATERNITY HOME.

	Africans	Arabs	Others	Total
Mothers admitted	... 101	21	8	130
Live births	... 97	19	8	124
Still births	... 8	3	—	11
	—	—	—	—
Total births	... 105	22	8	135
Infants who died within 10 days	... 7	2	—	9
Live infants discharged	... 90	17	8	115
	—	—	—	—
Maternal Deaths	... —	1	—	1

Five women were also admitted for miscarriages. There were 43,153 attendances at the clinic attached to the home of which 15,170 were ante or post natal welfare attendances.

II. RURAL MATERNITY CENTRES.

Centre	Makunduchi	Kizimkazi	Jambiani	Dimbani	Muyuni	Total
Mothers attended	... 195	40	52	35	33	355
Live births	... 181	38	51	35	33	338
Still births	... 20	2	1	—	2	25
Total births	... 201	40	52	35	35	363

283 of these cases were admitted to the maternity centres and 72 were attended in their own homes. All but eight of the women were Swahilis. No maternal or infantile deaths were recorded. The figures for Chutama centre are not included as they were not available, but it is understood that some 72 women were attended at the centre or in their own homes.

III. TOWN MATERNITY SERVICE OF VISITING MIDWIVES.

350 women of various races, principally Asiatic were attended during the year by the town midwives of the Association. 327 live births, nine still births and 15 miscarriages were reported. No maternal or infantile deaths were recorded.

SECTION VI.

HOSPITALS AND DISPENSARIES.

In the following tables A and B the details of the work carried out at the various Government hospitals and dispensaries is tabulated.

TABLE A.

MEDICAL UNITS, BEDS AND PATIENTS BY DISTRICTS.

	Zanzibar Island.			Pemba Island.		
	Zanzibar Town	District		Towns	District	Total
MEDICAL UNITS.						
European Hospital	...	1	—	—	—	1
Asiatic and African Hospital	...	1	—	3	—	4
Police Lines	...	1	—	—	—	1
Prison Infirmary	...	1	—	—	—	1
Infectious Disease Hospital	...	1	—	—	—	1
Walezo Poor House Hospital	...	—	1	—	—	1
Sub-Dispensaries	...	2	15	—	8	25
*Mental Hospital	...	—	—	—	—	—
IN-PATIENTS.						
Beds available :						
European	...	9	—	—	—	9
Asiatic and African in Hospitals	...	99	—	100	—	199
African in Hospitals	...	15	190	—	—	205
		—	—	—	—	—
Total	...	123	190	100	—	413
		—	—	—	—	—
Cases admitted :						
European	...	80	—	—	—	80
Asiatic and African in Hospital	...	1,966	569	1,643	—	4,178
Africans in Sub-Dispensaries	...	—	205	—	—	205
		—	—	—	—	—
Total	...	2,046	774	1,643	—	4,463
		—	—	—	—	—
OUT-PATIENT ATTENDANCES.						
Hospitals	...	85,428	38,830	60,288	—	184,546
Sub-Dispensaries	...	55,204	89,514	—	47,302	192,020
		—	—	—	—	—
		140,632	128,344	60,288	47,302	376,566
		—	—	—	—	—
TOTAL NEW CASES.						
European	...	389	—	—	—	389
Asiatics and Africans in Hospitals	...	25,568	12,704	32,895	—	71,167
African in Sub-Dispensaries	...	23,739	43,913	—	20,478	88,130
		—	—	—	—	—
		49,687	56,617	32,895	20,478	159,686

*A Mental Hospital to accomodate 45 inmates is situated in Zanzibar Town. There are three beds in it for sick patients.

TABLE B.

LIST OF SUB-DISPENSARIES.

Name	District	New cases 1934.	Attendances 1934.
Central Dispensary (Home Treatment)	Zanzibar	580	1,265
School Clinic	„	4,039	7,633
Mkokotoni	„	3,618	9,283
Seleni	„	3,831	9,605
Makunduchi	„	7,019	13,889
Mahonda	„	1,625	2,945
Mwera	„	4,379	8,139
Chaani	„	3,051	9,276
Uzini	„	2,218	6,733
Kizimbani	„	3,624	3,547
Bububu	„	1,760	3,128
Bweleo	„	2,092	3,846
Kizimkazi	„	1,716	2,750
Mangapwani	„	1,932	5,723
Chwaka	„	1,919	3,060
Tunguu	„	1,348	3,910
Mbiji	„	3,180	15,260
Mzambaraoni	Pemba	1,839	4,994
Matangatwani	„	3,503	10,025
Kinazini	„	2,387	12,121
Stambuli	„	2,521	2,440
Ole	„	2,170	5,901
Kengeja	„	5,994	5,526
Kangani	„	2,023	6,151
Jambangome	„	41	144

SECTION VII.

(A) REPORT ON PRISONS AND ASYLUMS FOR 1934.

Health.—The morbidity rate calculated on the daily average number of prisoners confined in all the Protectorate Prisons was 138.7. The details relating to each prison are set out in the following table:—

	Daily average in Prisons	Daily average on Sick List	Deaths	Morbidity Rate	Death Rate
Central Prison, Zanzibar	... 109.0	19.7	5	181.2	45.7
Chwaka Prison, Zanzibar	... 5.9	0.0	—	—	—
Mkokotoni Prison, Zanzibar	... 7.9	.1	—	—	—
Wete Prison Pemba	... 19.4	.3	—	—	—
Chake Chake Prison, Pemba	... 13.1	.3	—	—	—
Mkoani Prison, Pemba	... 8.0	1.0	—	—	—
	155.2	21.3	5	138.7	32.

It is inevitable that with the small numbers dealt with the morbidity rate should be rather exaggerated, particularly in respect of the smaller prisons, but the fact remains that in the Central Prison the rate was 181.2. A large proportion of new cases amongst the daily sick were accounted for by conditions such as constipation (67) malaria (67) local injuries (77) diarrhœa and colic (44) bronchitis (46) ulcers (32) conjunctivitis (24) and similar minor complaints and the same state of affairs prevailed in the smaller prisons where minor disabilities furnished most of the daily sick. Serious illnesses were not reported to be common in any of the prisons and there was no invasion by epidemic of infectious disease. The almost entire absence of dysentery was noteworthy as it has been prevalent in past years. Towards the end of the year a detailed medical examination of all prisoners was commenced and several matters of interest were observed. Many of the prisoners showed signs which are commonly associated with congenital, secondary and tertiary syphilis and blood samples taken for the Kahn test resulted in 38 per cent being positive. Some of the positive results may have been due to latent yaws, but clinical examination indicated that syphilis was probably the cause in most cases. Systematic courses of treatment with bismuth and arsphenamine were commenced and will be continued next year.

It appeared, too, that many of the adult male prisoners were suffering from acute or chronic gonorrhœa or gave a history of having contracted the disease in the past; arrangements were made accordingly to introduce systematic treatment for this disease.

But the most important and wide spread diseased condition was one which appeared to be very significant of vitamin deficiency; this involved many of the long term prisoners and some of those who were confined for a few months. The syndrome was characterized by slight weakness of the legs, sordes about the lips and gums, visual defects and some zerophthalmia. In no case were the symptoms so pronounced as to warrant a diagnosis of beri-beri, scurvy or pellagra, but in general the appearance of those who were ill approximated to that described by Leich (*Dietetics of Warm Climates*) when referring to the prisoners who suffered from "avitaminosis" in Sierra Leone prison. Quite apart from the disability arising from this condition of avitaminosis, the symptoms of which appear to have been recorded mainly as myalgia, cellulitis and arthritis, it is certain that the large attendance at the daily sick parade for trivial and minor illnesses can be attributed to the condition of lowered resistance due to this condition.

Deaths.—Five deaths only occurred and all took place at the Central Prison. One remand prisoner died of acute mania shortly after admission; the remainder of the deaths were due to myocarditis (1), pleuro-pneumonia (1), acute lymphangitis (1) anæmia and tertiary syphilis (1). The death rate for the Central prison was 45.7, but the small numbers of prisoners dealt with make this rate an unreliable indication and the calculated rate of 32 in respect of all the prisoners in the Protectorate gives a more accurate idea of the mortality which occurred.

Diet.—The scale of diet for prisoners is that authorized by the Prison Diet Amendment Rules of 1927 and 1929 and is as follows:—

EUROPEANS.

		Daily.			Daily.
Bread	...	16 ozs.	Sugar	...	2 ozs.
Meat	...	16 "	Milk	...	$\frac{1}{2}$ pint
Potatoes	...	8 "	Fish	...	8 ozs.
Vegetables	...	8 "	Salt	...	1 oz.
Butter	...	2 "	Marrowfat	...	$\frac{1}{2}$ oz.
Tea	...	$\frac{1}{2}$ oz.	Fruit	...	4 pice

INDIANS AND ARABS.

		Sun.	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.
Wheat flour	ozs.	16	—	16	—	16	—	16
Rice	..	8	8	—	8	—	8	—
Meat	..	4	—	4	—	4	—	4
Fish	..	—	4	—	4	—	4	—
Curry	drs.	2	2	2	2	2	2	2
Salt	..	12	12	12	12	12	12	12
Onions	..	4	4	4	4	4	4	4
Dhall	ozs.	4	4	4	4	4	4	4
Ghee	..	1	1	1	1	1	1	1
Bread	..	8	8	8	8	8	8	8
Coconut	nos.	1/10	1/10	1/10	1/10	1/10	1/10	1/10
Lemons	..	2/7	2/7	2/7	2/7	2/7	2/7	2/7

NATIVES.

Rice	ozs.	16	8	—	8	16	—	—
Mtama	..	—	16	16	16	8	16	24
Beans	..	8	—	8	—	—	8	—
Fish	..	4	4	4	4	4	4	4
Curry	drs.	2	2	2	2	2	2	2
Salt	..	12	12	12	12	12	12	12
Onions	..	2	2	2	2	2	2	2
Chillies	nos.	1	1	1	1	1	1	1
Coconut	nos.	1/10	1/10	1/10	1/10	1/10	1/10	1/10
Lemons	..	2/7	2/7	2/7	2/7	2/7	2/7	2/7

A consideration of the components of these diets reveals the fact the available vitamin is low and that the proportions of protein, carbohydrate and fat are not entirely suitable. The calorific value of the food stuffs also falls below the standard of 3,000 per diem which is considered to be the minimum for persons undertaking work of an arduous nature. A prolonged subjection to a diet of this nature must be conducive to a condition of vitamin deficiency and that the consequences of this deficient diet have not been more serious must be ascribed to the fact that the prison superintendent has issued oranges and other fruits from his own garden, when they were available, and that the prisoners are not called upon to perform work which they could be called "hard labour", as understood in English Prisons. It is also customary for prisoners who are seriously ill to be treated in the Government hospital and this ensures that a really adequate diet is received by those most in need of it. By the end of the year a new ration scale containing an adequate supply of vitamins and calories was being prepared.

Sanitary Conditions.—The cubic feet of space per prisoner in all the Protectorate prisons is adequate and more than 40 square feet of floor space was available for each prisoner during the hours of sleep.

The conservancy in all the prisons was carried out by the bucket system except at the Central prison where a water carriage system, with septic tanks, is provided. Generally both systems were satisfactory.

(B) LUNATIC ASYLUM—ZANZIBAR.

The lunatic asylum is situated in buildings which are an extension of the Central Prison and the officer in charge of the institution is the Superintendent of the Gaol, who also controls the African staff. This is a somewhat anomalous situation but it is compensated for by the fact that, so far as the buildings and lay out of the Asylum allow, the inmates are dealt with in a humane way and are allowed as much liberty as possible. Neither the building nor its situation are really suitable for the use to which it is put and in the future accommodation more in accordance with modern practice will be required.

During the year the premises were maintained in a most admirable state of cleanliness and on every occasion when it was visited by surprise, or by appointment, everything was found to be in order. This reflects considerable credit on the officer responsible, as for the greater part of the year the officer in charge of the police dépôt had to undertake the care of the Asylum and Prison in addition to his usual duties.

The types of insanity from which the lunatics suffer are as follows:

Melancholia	...	11 cases	Dementia Precox	...	7 cases
Mania	...	12 cases	Paranoia	...	1 case
G.P.I.	...	2 cases	N.Y.D.	...	1 case

But on account of the difficulty experienced in ascertaining the mental condition of primitive Africans these diagnoses must be accepted with reserve.

During the year there were three deaths and the causes of these were: General Debility (1), Senile Debility (1), Acute Mania (1).

There was very little sickness amongst the inmates and no outbreaks of any infectious disease or diseases directly due to living conditions. But a survey of the health of the patients was undertaken towards the end of the year and it was found that a positive Kahn reaction was obtained in 29 per cent of the cases and intestinal parasites were found in nearly half; other diseases brought the total percentage of cases suffering from some ailment up to 83. On the whole the general health was no better than the usual standard pertaining amongst Africans. The treatment given for the above complaints may be expected to react favourably on the mental conditions of the patients.

It was noted that during the year there had been either a loss in weight or a failure to gain weight on the part of almost all the patients. In view of the sedentary life they live this was not considered satisfactory and review of the diet was accordingly carried out. It was found that the diet, whilst possibly just adequate, was monotonous and the meals were badly spaced. In consequence, not all the food was eaten and certainly its advent was not looked forward to by the patients. The following diet scale was suggested, and by the end of the year authority has been obtained for its introduction in 1935; three meals a day at suitable intervals, will be given. It is hoped that the new diet will have a markedly beneficial effect both on the physical and mental condition of the asylum inmates.

DIETARY SCALE.

Days.	Morning 7 a.m.	Noon 12.	Evening 5-30 p.m.
Sunday	Bread 6½ oz. Tea ⅛ „ Sugar 1 „ Milk 2 „ Cigarettes 6 nos.	Sweet Potato or Ripe Bananas 1 lb. Coconut ⅓rd Sugar 1 oz. Fresh Fruit 1 pice	Rice 12 oz. Fish 4 „ Salt ¼ „ Coconut ⅓rd Lemon ¼th Ghee ⅓ oz. Curry powder ¼ „ Onion ½ „ Tomato 2 „ Vegetable 2 „
Monday	As for Sunday	Cassava 1 lb. Coconut ⅓rd Beans 4 oz. Salt ¼ oz. Fresh Fruit 1 pice	As for Sunday
Tuesday	As for Sunday	Unripe Banana 1 lb. Coconut ⅓rd Fish 2 oz. Salt ¼ oz. Fresh Fruit 1 pice	As on Sunday except 4 oz. meat instead of fish.
Wednesday	As for Sunday	Sweet Potato or Yam 1 lb. Coconut ⅓rd Fish 2 oz. Salt ¼ oz. Fresh Fruit 1 pice	As for Tuesday
Thursday	As for Sunday	As for Monday	As for Sunday
Friday	As for Sunday	As for Tuesday	As for Tuesday
Saturday	As for Sunday	As for Wednesday	As for Tuesday

Very little in the way of psychological treatment is possible when dealing with African lunatics. Good food, pleasant surroundings, medical treatment for bodily ills and adequate amusement are the only useful methods which can be employed. At the moment the provision of pleasant surroundings is impossible but the prison authorities have re-arranged the daily

programme so that every lunatic spends five hours daily in the open air. Further minor structural arrangements may make it possible to increase this "free" period, but the site and the nature of the asylum makes this difficult. For amusement the men tentatively play at football but their efforts are not very enthusiastic; they smoke a good deal and tobacco is supplied; they play games with cards and the ubiquitous "Bau la Kombe" game which is a variety of solitaire.

Both women and men make coir ropes and this very monotonous work appears to afford them endless amusement. The women now help to prepare the food for themselves and the men, and some take considerable interest in this work. It is not practicable so far to allow the lunatics to work in a garden but it is possible this may be brought about in future.

Details of those who were admitted, discharged and died during the year are as follows:—

		Males	Females	Total
No. of Inmates on 31st December, 1934	...	22	14	36
.. of Inmates admitted during 1934	...	8	1	9
.. released	...	4	4	8
.. who died	...	3	—	3
.. remaining on 31st December, 1934	...	23	11	34

(C) POOR ASYLUM.

The Roman Catholic Mission continued to give the same excellent service as in former years; great credit is due to the Sister in charge, and to the Sister in charge of the Tuberculosis Wards for the unfailing devotion, care and skill they displayed in nursing their charges. Many of the inmates are completely bed ridden and require considerable attention. When it is considered that the average daily number of patients totals 160 (approx.) and that there are only two Sisters to supervise their welfare, some idea of the magnitude of the task may be essential.

Buildings.—The existing buildings were maintained in a satisfactory condition, and the available accommodation proved to be sufficient for the numbers of inmates.

The following is the return of inmates for the year:—

		Males	Females	Total
Patients remaining on 31st December, 1933	...	118	40	158
.. admitted during 1934	...	464	105	569
.. died during 1934	...	140	55	195
.. discharged during 1934	...	328	41	369
.. remaining at the end of 1934	...	115	48	163

The Principal causes of death were returned as:

Senility and General Debility.
Tuberculosis.
Leprosy.

Paralysis.
Ancylostomiasis.
Chronic Nephritis.

The out-patient dispensary was very well patronised by natives living in the vicinity. The number of new cases during 1934 was 5,255 and the total of re-attendances was 19,942.

A Medical Officer visited the Poor Asylum on an average twice weekly. The Sub-Assistant Surgeon visited three times weekly.

SECTION VIII.

METEOROLOGY.

All available information is printed in the Blue Book for the Protectorate.

SECTION IX.

(A) ANNUAL REPORT OF THE PATHOLOGICAL LABORATORY.**1. ZANZIBAR.**

Staff.—During the year an ungraded laboratory attendant, who had contracted pulmonary tuberculosis in 1933, was invalided and not replaced.

Otherwise the staff was unchanged.

Building and Equipment.—The accommodation was extended in the Health office building in the latter half of the year, to provide a general office and a combined private office and laboratory for the Pathologist, both of which were much needed.

The installation of a petrol gas plant, when financial conditions permit, will greatly facilitate the work of the laboratory.

General Remarks.—During the year 13,897 examinations were undertaken in the laboratory, being an increase of 4,022 over the total for 1933.

This increase was not limited to any one section, but was spread over every activity of the laboratory.

As in previous years, the bulk of the clinical material was received from the Native Hospital, Zanzibar, but there is a growing tendency for Medical Officers in Pemba to send specimens and it was possible this year, for the first time, to arrange for regular weekly receipt of blood sera for Kahn Test from Pemba.

The time of the staff was fully occupied with routine work, leaving little opportunity for work of a special nature, or research. This is greatly regretted, as certain lines of research had been allotted to this laboratory by the Medical Research Conference held in Entebbe in 1933. Every effort will be made in 1935 to carry out at least part of the research programme.

A special investigation, however, was undertaken with a view to detecting the suspected typhoid carrier in a certain quarter of the Town.

Through the courtesy of the Chief Veterinary Officer, Kenya, ten strains of *B. enteritidis* (*Gaertner*) and five Gaertner sera were received from Kabete.

The thanks of the Pathologist are due to the acting Deputy Director of Laboratory Services, Tanganyika, for his assistance in supplying Kahn antigen, to enable this test to be commenced pending arrival of supplies from England.

The assistance of the Senior Bacteriologist, Kenya in giving an opinion on a section of tissue is also acknowledged.

In this report, routine work is reported under the following headings:—

- A. Parasitology
- B. Serology
- C. Bacteriology
- D. Biochemistry
- E. General Clinical Pathology
- F. Public Health
- G. Autopsies and Histology
- H. Medico-legal
- I. Special Investigation.

Comments are made under each heading and the figures tabulated separately for convenient reference.

(A) PARASITOLOGY.**(1) BLOOD FILMS.**

Malaria.—An increase of 2,429 over these examinations for 1933 is recorded. There is a great drop in the number of quartan parasites, only six being recorded as against 26 in 1933. As usual, crescents were rare, being found only twice.

The large number of undefined parasites was due to pressure of work, for though, whenever possible, a thin film was examined to identify parasites of uncertain species found in the thick film, it frequently happened that the parasites were so scanty that none could be found in the thin film in the time available for examination, or on occasion, time did not permit this examination.

Microfilaria.—All were *Mf. bancrofti*, and were mostly found during examination of malaria slides.

Spirochaeta obermeiri.—The two positive cases were both infections acquired on the mainland.

(2) FÆCES.

This year 2,050 specimens were examined, an increase of 764 over last year's total.

No *Entamoeba histolytica* was recorded, supporting the view advanced in previous years, that this infection is not endemic in Zanzibar. Of the three Schistosome infections, two were due to *S. mansoni* and one to *S. hæmatobium*.

The rare occurrence of intestinal flagellates is worthy of note. The percentage of *Ancylostome* ova found is 53.4 per cent, compared with 45.6 per cent last year.

(3) URINE.

No comment is called for.

(B) SEROLOGY.

(1) SYPHILIS AND YAWS.

The recommendation of the Entebbe Conference, that the Kahn Test should be the standard test throughout East Africa, was put into effect as soon as the necessary apparatus could be obtained, being commenced in March, after which date the Wasserman reaction was discontinued.

In July the first sera from Chake Chake, Pemba were received; out of a total of 56 received, 23 were positive, and eight doubtful. Two sera were sent from Mkoani, Pemba, one being doubtful and the other negative.

Five sera from Dar-es-Salaam Laboratory, and five from this laboratory were interchanged for comparison. The readings in both Laboratories were identical, with one exception, an opaque serum which read ++ in Dar-es-Salaam and + in Zanzibar. Towards the end of the year examinations of the sera of healthy inmates of the Central Prison and Asylum, and of schoolboys, were made to ascertain the incidence of Syphilis. Sera were also received from the Police Lines, taken from patients and from healthy individuals.

From the Prison	73 sera gave 28 positives or 38.3%
.. .. Asylum	27 8 29.6%
.. .. Schoolboys	92 7 7.6%
.. .. Police	16 4 25.0%

The serum of 10 Boy Scouts, volunteers for transfusion, were also tested and were all negative.

(2) ENTERIC GROUP.

Bact. typhosum. The actual number of sera received and the relative number of positive results has been greatly reduced this year, the percentages of positives for *Bact. typhosum* being 27.4 per cent for 1933 and 21.4 per cent for 1934.

Of the 3 positive sera, 1 gave "H" agglutination only.

1 .. "O"
1 .. both "H" and "O" agglutinations.

Salmonella Group.—The one positive serum was obtained from a stoker on a British India Home Line vessel. It proved to agglutinate with specific "H" *B. enteriditis* (Gaertner) suspension supplied by the Standards Laboratory, Oxford, as well as with *Bact. typhosum* "O" suspension from the same source.

(C) BACTERIOLOGY.

(1) BLOOD.

Cultures were positive in four cases out of a total 15 cultures made, the organisms isolated being:

<i>Streptococcus</i>	...	1
<i>Staphylococcus</i>	...	2
<i>Bact. typhosum</i>	...	1

(2) FÆCES.

Ninety-six specimens were cultured.

Dysentery bacilli were isolated in 27 cases, being classified as:

B. shiga	...	2
B. flexner	...	22
B. sonne	...	3

All the Flexner cultures were typed, using V, W, X, Y, Z type sera from the Standards Laboratory, Oxford.

They fell into the following types:—

Y	...	1
W Y	...	3
W X Z	...	2
X Y Z	...	16

the relative proportions of components varying in different strains. From the dysenteric stool of a Native Hospital Ward boy both *B. shiga* and *B. flexner* (WY type) were isolated.

Bact. typhosum was isolated from two individuals, one of whom was the patient referred to below (under urine culture).

(3) URINE.

The finding of *Bact. typhosum* in the urine was in a convalescent patient, who gave positive cultures on three occasions in three weeks, one being positive the day he left hospital, on which he insisted. A further test was negative, but he was regarded as a probable carrier and further specimens requested. It was found a few days later that he had left for his home in Ceylon.

(4) SPUTUM.

There is nothing of note to record.

(5) THROAT SWABS.

C. diphtheriæ was isolated from a case which subsequently died.

- (6) Pus.
- (7) SMEARS AND CULTURES FOR GONOCOCCI.
- (8) SMEARS FOR M. LEPRÆ.
- (9) PATHOLOGICAL FLUIDS.
- (10) DENTAL CULTURES.

There is nothing of interest to record in regard to above examinations.

(11) VACCINES.

Of the 117 vaccines prepared, the great majority were made of mixed organisms isolated from cases of pulmonary tuberculosis and asthma.

In addition, 362 c.c. of *Gonococcus* vaccine from local strains was issued to Medical Officers.

A batch of 50 c.c. of T.A.B. vaccine was prepared, but proved to be so toxic that it was replaced by sensitised T.A.B. vaccine, 10 c.c. being made, which proved satisfactory.

(12) BESREDKA'S ANTIVIRUS.

The preparation of this was continued, mostly for mixed *Staphylococcus aureus albus* and *Streptococcus*. A small quantity had also the addition of *B. coli*.

(13) YEAST SUSPENSION.

A pure culture of baker's yeast was used to make 2,450 c.c. of a thick suspension, all of which was issued to the Central Prison, Zanzibar for treatment of cases thought to be suffering from Vitamin deficiency.

(D) BIOCHEMISTRY.

The number of blood sugar estimations has increased this year by 137, although the fortnightly examination of patients under insulin treatment was in some cases extended to a monthly test in the latter part of the year.

Included in the tests for glycosuria are the routine tests done in connexion with blood sugar estimations which if deducted give 44 separate examinations.

(E) GENERAL CLINICAL PATHOLOGY.

The Formol Gel Test was done on the serum of an Indian girl suffering from an undefined fever of some two years duration. It was positive after half an hour, thus excluding the possibility of Kala-azar.

Blood Grouping was carried out on 10 Boy Scouts, who volunteered as donors for transfusion, and on a patient with four of these volunteers.

(F) PUBLIC HEALTH.

(1) WATER.

Monthly routine examinations of the Zanzibar Town supplies were made, samples being taken from both Bububu and Chem Chem Springs, from the Saateni Storage Tank on the Chem Chem System, and from taps in town.

Special examinations of the Chem Chem water were made from time to time.

In general, the quality of the water was excellent.

Other waters examined were:—

From a rain water cistern in Town	— B. coli present.
From the well at Donge School	— No B. coli present, but as the well had been disused for many years, effective chlorination was carried out.
From 2 wells in Town	— B. coli present in both.
From 2 springs at Dole	— B. coli found in one only.

(2) MILK.

The 11 samples were received from the Medical Officer of Health. They gave the presumptive B. coli test in volumes of from 0.001 c.c. to 0.000001 c.c. with correspondingly high colony counts, but in no case was excretal B. coli found, the organisms all being of B. aerogenes type.

(3) SEWAGE.

One examination of effluent from the septic tank of a public latrine was made.

Two samples were taken from the sewer outfall at Old Customs for examination for Bact. typhosum in connexion with the search for a typhoid carrier but were negative.

(4) RATS.

Spleen smears were examined as a routine from rats trapped by the Sanitation Branch. All were negative for plague.

(G) AUTOPSIES.

These were all done at the instance of the police, for medico-legal purposes.

Histology.—The number of examinations under this heading is almost double that of last year.

(H) MEDICO-LEGAL.

These examinations call for no comment.

(I) SPECIAL INVESTIGATION.

This was commenced with a view to finding the suspected typhoid carrier in the Post Office area.

The blood of a former sufferer from typhoid fever, and of 10 contacts with previous cases were examined by the Agglutination Test, one woman giving a suspiciously strong reaction. Repeated examinations of urine and faeces from this person were all negative.

Two samples of sewage from the sewer draining this area and two samples of sea-water at the outfall were examined, but without success. The work had then to be suspended.

A. PARASITOLOGY.

BLOOD.—	Positive	Negative	Total
<i>Malaria</i> : Benign Tertian	1,232	—	—
Subtertian	315	—	—
Quartan	6	4,580	6,852
Undefined	710	—	—
<i>Microfilaria</i> :	51	—	—
<i>Spirochæta obermeiri</i>	2	1	3
			6,855
FÆCES.—			
<i>Ascaris</i>	66	—	2,011
<i>Ancylostoma</i>	1,074		
<i>Schistosoma</i>	3		
<i>Strongyloides</i>	158		
<i>Tænia</i>	1		
<i>Trichuris</i>	231	—	37
<i>Entamœba coli</i>	5		
<i>Giardia intestinalis</i>	2		2
			2,050

URINE.—

<i>Schistosoma hæmatobium</i>	67	48	115
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B. SEROLOGY.

Wasserman reaction	54	67	121
Kahn Test	227	497	724
Agglutination tests—			
<i>Bact. typhosum</i>	3	11	14
<i>Salmonella</i> group	1	—	1

C. BACTERIOLOGY.

<i>Blood Culture</i>	4	11	15
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FÆCES.—

<i>B. dysenteriae shiga</i>	2	—	(74) 27
<i>flexner</i>	22		
<i>sonne</i>	3		
<i>Bact. typhosum</i>	2	—	22

URINE.—

<i>Bact. typhosum</i>	1	15	16
<i>B. coli</i>	1	—	1
			128

SPUTUM.—

T.B. in films	257	473	730
T.B. by antiformin method	2	5	7
Injection of guinea-pig for T.B.	—	1	1
Culture for vaccine preparations	—	—	61
			799

THROAT SWABS.—

<i>C. diphtheriae</i>	1	23	24
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PUS.—

<i>Smears for gonococci</i> —			
urethral	62	94	156
cervical	—	2	2
conjunctival	—	4	4
<i>Culture for gonococci</i>	—	1	1
			163

NASAL AND SKIN SMEARS

for <i>M. lepræ</i>	7	18	25
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PATHOLOGICAL FLUIDS.—

Peritoneal	2
Pleural	1
Synovial	2
Chancre juice	2
	<hr/>
	7
	<hr/>

DENTAL CULTURES

2

VACCINES.—

Mixed	117 c.c.
Gonococcees	362 c.c.
T.A.B.	60 c.c.

BESREDEKA'S ANTIVIRUS

2,000 c.c.

YEAST SUSPENSION

2,450 c.c.

D. BIOCHEMISTRY.

Van den Bergh Reaction	5
Blood sugar estimation	478
Sugar tolerance tests	7
Blood urea estimation	30
Quantitative estimation of albumin in urine	1
Quantitative estimation of urea in urine	32
Presence of sugar in urine	522
.. .., Ketone bodies	135
.. .., Pigments	2
.. .., Indican	3
Fractional test meals	4
Examination of vomit	1
Occult blood	1
	<hr/>
	1,221
	<hr/>

E. GENERAL CLINICAL PATHOLOGY.

BLOOD.—

Red cell count and colour index	69
Leukocyte count	31
Leukocyte count Differential and Cooke count	1
Differential count only	35
Cooke count only	15
Complete blood count	2
Sedimentation test	3
Fragility of red corpuscles	1
Formol gel test	1
Blood grouping	16

URINE.—

General examination	20
Examination of deposit only	207

SPUTUM.—

Examination for Curschmann's spirals	1
	<hr/>
	402
	<hr/>

F. PUBLIC HEALTH.

Water	140
Milk	11
Sewage	3
Rats	916
	<hr/>
	1,070
	<hr/>

G. AUTOPSIES.

Drowning	3
Natural causes following disease	2
Stabbing	1
Subdural hæmorrhage from a blow	1
Fractured skull, crushed by car	1
	<hr/>
	8
	<hr/>

HISTOLOGY.—

<i>General</i> : Inflammation of spermatic cord	2
" " other organs	4
Appendicitis, chronic	1
Tuberculosis of glands	3
" " of Synovial membrane	1
Curetting from uterus	1
Fibrosis of breast	1
Lymphadenoma, lymph gland	1
Teratoma of testis	1
<i>Benign Tumours</i> :	
Adenoma of gall-bladder	1
" " prostate	2
Adeno-fibroma of breast	1
Papillary cyst-adenoma from cheek	1
Fibroma of leg	1
Simple epulis of jaw	1
Erosion of cervix	1
<i>Malignant Tumours</i> :	
Round-celled Sarcoma from muscle of back	1
" " " " " " leg	1
Squamous-celled Carcinoma of lip	1
" " " " " " ulcer on leg	1
" " " " " " gall-bladder	1
" " " " " " cervix	1
" " " " " " site unknown	2
	<hr/> 31 <hr/>

H. MEDICO-LEGAL.

Clothing for seminal stains and blood	1
" " " " " only	3
Knife for blood stains	1
Cushion for blood stains	—
Motor car wheel for blood stains	1
Sticks for blood stains	1
	<hr/> 7 <hr/>

I. SPECIAL INVESTIGATION

1

GRAND TOTAL	13,897
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(2) CHAKE CHAKE.

The Chake Chake Laboratory has been very full this year with the more simple routine investigations of bloods, urines, stools, sputa, and smears of various kinds, as the following table shows. The total of examinations is more than treble that of the previous year:—

No. of Blood Examinations, each entailing a thick and thin film	= 1293	
No. of these shewing no parasites	= 843	450
" " " " " P. vivax and P. falciparum	= 22	
" " " " " " only	= 133	
" " " " " P. falciparum only	= 62	
" " " " " Undefined plasmodia	= 196	413
" " " " " Microfilaria	= 17	
" " " " " Eosinophilia or other abnormalities	= 270	
No. of Urine Examinations	= 1509	
No. of these shewing albumen	= 104	
" " " " " Schistosoma eggs	= 102	
" " " " " Bile salts	= 62	
" " " " " Sugar	= 19	
" " " " " that were normal	= 914	
No. of Faeces examinations	= 1434	
No. of these shewing Ancylostome eggs	= 522	
" " " " " Strongyloides	= 2	
" " " " " Ascaris eggs	= 67	
" " " " " Trichuris eggs	= 173	
" " " " " Schistome hæmatobium	= 29	
" " " " " Multiple infestation	= 116	
" " " " " no abnormalities	= 527	

No. of Sputum examinations	=	140
No. of these in which acid fast organisms were observed	=	24
No. of Smears of various material examined	=	81
No. of times Gonococci observed	=	11
No. of examinations for M. lepræ	=	100
No. of times M. lepræ were observed	=	12
Total Number of Examinations	=	4557

Fifty-six bloods and several tissues for sectioning have been sent to the Pathologist who has kindly sent us illuminating reports.

(3) WETE LABORATORY RETURN.

Blood Examination	Urine.	Skin and Nasal Smear	Sputum.	Fæces.
Total—86.	Total—72.	for M. Lepræ. 22.	Total—18.	Total—51.
Malaria B.T. 15				
„ S.T. 16	Schistosoma 9	Positive 7	Positive 7	Ancylostoma 28
„ Undefined 14				
„ Negative 41	Routine 63	Negative 15	Negative 11	Other examinations 23
Micro-filaria 1				
Differential counts 3				

NOTE :—“Repeat” examinations of Urine and Fæces are not counted in the totals.

(B) SCIENTIFIC.

Scientific papers published during the year 1934 by members of the Medical Staff:—

Dr. W. Leslie Webb:

The subdispensary system in Uganda.—Tropical Diseases Bulletin, Vol. 31, No. 6.

Dr. S. M. Vassallo:

Urinary Fistula in the Female.—The East African Medical Journal, Vol. XI, No. 6.

TABLE I.

SANCTIONED ESTABLISHMENT. 1934.

The establishment for 1934, as sanctioned in the Estimates, was as follows:—

ADMINISTRATION DIVISION.

Director of Medical and Sanitary Services.
12 Clerks.

SPECIAL APPOINTMENTS.

1 Resident Surgical Officer. 1 Dental Surgeon.
1 Leprosy Officer.

MEDICAL DIVISION—GENERAL.

1 Senior Medical Officer. 1 Instructor Native Dispensers.
8 Medical Officers. 5 Asiatic Dispensers.
1 Assistant Surgeon. 1 Asiatic Cook.
6 Sub-Assistant Surgeon.

NURSING STAFF.

1 Matron. 8 Nursing Sisters.

SANITATION DIVISION.

Deputy Director of Sanitary Services. 1 Sub-Assistant Surgeon.
1 Health Officer: 3 Asiatic Sanitary Inspectors.
1 Sanitary Superintendent.

LABORATORY.

1 Pathologist. 1 Senior Laboratory Assistant (Asiatic).
1 Laboratory Assistant (Asiatic).

TABLE II.
FINANCIAL.

	£
	1934.
A. EXPENDITURE—MEDICAL DEPARTMENT.	
Personal Emoluments	... 25,203
Other Charges :—	
General Stores	... 1,041
Drugs and Surgical Requisites	... 2,482
Subsistence of Hospital patients	... 1,858
Passages	... 1,700
Sanitation Labour	... 1,553
Maintenance of Lepers	... 562
Tuberculosis treatment, Maintenance of Clinic and Patients	... 536
Miscellaneous Services	... 2,911
	<hr/> 37,846
B. EXPENDITURE—MUNICIPALITY.	
Personal Emoluments	... 3,330
Other Charges :—	
Equipment and Stores, Sanitation	... 222
Sanitation Labour	... 4,315
	<hr/> 7,867
C. GRANTS IN AID.	
Roman Catholic Mission for Maintenance of pauper Hospital	... 1,068
Zanzibar Maternity Association	... 607
	<hr/> 1,675
Grand Total Expenditure	... 47,388
D. REVENUE.	
Hospital fees, Sale of Drugs, etc.	... 1,380
Contributions from other dependencies towards Quarantine Services	... 2,475

TABLE III.
RETURN OF STATISTICS OF POPULATION.

All the information available is in the Protectorate Blue Book.

TABLE IV.
METEOROLOGICAL RETURN.

The following is a brief summary of the more important meteorological returns available for the year, compared with the means for the years 1892-1933 in the case of Zanzibar and the means for the years 1899-1933 in the case of Pemba.

		Zanzibar (Town)		Pemba (Wesha)	
		1892-1933	1934	1899-1933	1934
		F.	F.	F.	F.
Mean of daily maxima	...	84.4	84.3	86.3	85.9
.. .. minima	...	76.6	77.3	76.0	72.2
.. .. range	...	7.8	7.0	10.3	13.7
Mean	...	80.5	80.8	81.1	81.1
Rainfall (inches)	...	58.33	77.83	72.6	83.38
Rainy days	...	102.6	127.0	161.0	147.0

TABLES V AND VI.

Return of Diseases and Deaths for the Year 1934.

DISEASES	TABLE V					TABLE VI
	Remaining in Hospital at end of 1933	Yearly Admissions	Total Cases Treated	Total Deaths	Remaining in Hospital at end of 1934	All Cases including both In- and Out-Patients
I. EPIDEMIC, ENDEMIC AND INFECTIOUS DISEASES.						
1. Enteric Group—						
(a) Typhoid Fever	...	6	6	2	1	6
(b) Paratyphoid A	...	1	1	1	...	1
(c) Paratyphoid B	...	...	...	...	...	1
(d) Type not defined	...	...	...	...	...	...
2. Typhus	...	...	...	...	...	...
3. Relapsing Fever	...	1	1	...	...	1
4. Undulant Fever	...	...	...	...	...	...
5. Malaria—						
(a) Tertian	4	75	79	...	1	1,482
(b) Quartan	...	3	3	...	...	126
(c) Æstivo-autumnal	...	46	46	3	2	786
(d) Clinical	...	65	65	3	...	6,637
(e) Mixed Infections	...	...	...	...	...	...
(f) Cachexia	1	17	18	3	...	751
(g) Blackwater	...	11	11	5	...	14
6. Smallpox	...	...	...	...	...	...
Alastrim	...	...	...	...	...	...
7. Measles	...	10	10	...	...	42
8. Scarlet Fever	...	...	...	...	...	...
9. Whooping Cough	...	3	3	...	...	70
10. Diphtheria	...	2	2	2	...	2
11. Influenza	...	78	78	...	2	2,216
12. Miliary Fever	...	...	...	...	...	...
13. Mumps	...	1	1	...	...	42
14. Cholera	...	...	...	...	...	...
15. Epidemic Diarrhoea	...	...	...	...	...	...
16. Dysentery—						
(a) Amoebic	...	4	4	...	...	9
(b) Bacillary	3	22	25	...	1	26
(c) Undefined or due to other causes	...	2	2	...	...	34
17. Plague—		28	31			69
(a) Bubonic	...	...	...	...	...	...
(b) Pneumonic	...	...	...	...	...	...
(c) Septicæmic	...	...	...	...	...	...
(d) Undefined	...	...	...	...	...	...
18. Yellow Fever	...	...	...	...	...	...
19. Spirochaetosis ictero-hæmorrhagica	...	...	...	...	...	...
20. Leprosy	34	18	52	11	29	50
21. Erysipelas	...	...	...	...	...	1
22. Acute Poliomyelitis	...	...	...	...	...	...
23. Encephalitis Lethargica	...	...	...	...	...	...
24. Epidemic Cerebro-Spinal Fever	...	...	...	...	...	...
25. Other Epidemic Diseases—						
(a) Rubeola (German Measles)	...	...	...	...	...	71
(b) Varicella (Chicken-pox)	...	21	21	...	...	76
(c) Kala-azar	...	...	...	...	...	...
(d) Phlebotomus Fever	...	...	...	...	...	...
(e) Dengue	...	...	...	...	...	...
(f) Epidemic Dropsy	...	...	...	...	...	...
(g) Yaws	...	23	23	...	1	4,343
(h) Trypanosomiasis	...	...	...	...	...	...
(i) P.U.O.	...	...	...	...	...	...
26. Glanders	...	...	...	...	...	...
27. Anthrax	...	...	...	...	...	...
28. Rabies	...	...	...	...	...	...
29. Tetanus	...	4	4	2	...	4
30. Mycosis	...	...	...	...	...	1
31. Tuberculosis, Pulmonary and Laryngeal	22	132	154	50	25	191
32. Tuberculosis of the Meninges or Central Nervous System	...	...	...	...	...	...
33. Tuberculosis of the Intestines or Peritoneum	...	1	1	...	...	1
34. Tuberculosis of the Vertebral Column	1	3	4	...	1	4
35. Tuberculosis of Bones and Joints	1	2	3	...	...	2
36. Tuberculosis of other Organs—						
(a) Skin or Subcutaneous Tissue (Lupus)	...	1	1	...	...	1
(b) Bones	...	...	...	...	...	...
(c) Lymphatic System	...	2	2	...	...	2
(d) Genito-urinary	...	...	...	...	...	...
(e) Other organs	...	...	...	...	...	...
37. Tuberculosis disseminated—						
(a) Acute	...	...	...	...	...	...
(b) Chronic	...	...	...	...	...	1
38. Syphilis—						
(a) Primary	...	7	7	...	...	103
(b) Secondary	2	9	11	...	1	215
(c) Tertiary	2	33	35	4	4	125
(d) Hereditary	...	1	1	...	...	1
(e) Period not indicated	...	2	2	...	...	2
(f) Latent	...	...	...	...	...	...

TABLES V AND VI.—*contd.*

DISEASES	TABLE V					TABLE VI
	Remaining in Hospital at end of 1933	Yearly Admissions	Total Cases Treated	Total Deaths	Remaining in Hospital at end of 1934	All Cases including both In- and Out- Patients
I. EPIDEMIC, ENDEMIC, AND INFECTIOUS DISEASES <i>contd.</i>						
39. Soft Chancre	7	7	...	...	44
40. A.—Gonorrhœa and its complications	25	25	...	2	1,698 ✓
B. Stricture
C. Stricture and Extravasation
D. Gonorrhœal Ophthalmia	1	1	...	...	5
E. Gonorrhœal Arthritis	12	12	...	2	111
F.—Salpingitis, etc.
G. Granuloma Venereum
41. Septicæmia	14	14	4	...	21
42. Other Infectious Diseases ...	2	34	36	...	5	504
II. GENERAL DISEASES NOT MENTIONED ABOVE.						
43. Cancer or other malignant Tumours of the Buccal Cavity	2	2	1	...	2
44. Cancer or other malignant Tumours of the Stomach or Liver	4	4	3	...	4
45. Cancer or other malignant Tumours of the Peritoneum Intestines, Rectum	4	4	2	...	4
46. Cancer or other malignant Tumours of the Female Genital Organs ...	1	5	6	...	...	5
47. Cancer or other malignant Tumours of the Breast
48. Cancer or other malignant Tumours of the Skin	1	1	...	...	1
49. Cancer or other malignant Tumours of organs not specified	8	8	3	...	11
50. Tumours non-malignant	24	24	2	1	73
51. Acute Rheumatism	1	1	...	...	38
52. Chronic Rheumatism	8	8	...	...	1,092
52A. Myalgia
53. Scurvy (including Barlow's Disease)
54. Pellagra	1
55. Beri-Beri	4	4	...	1	16
56. Rickets	4
57. Diabetes (not including Insipidus)	25	25	2	3	42
58. Anæmia—
(a) Pernicious
(b) Other Anæmias and Chlorosis	1	1	...	...	680
59. Diseases of the Pituitary Body
60. Diseases of the Thyroid Gland—
(a) Exophthalmic Goitre	5
(b) Other diseases of the Thyroid gland, Myxœdema	1	1	...	...	4
(c) Others
61. Diseases of the Para-Thyroid Glands	2
62. Diseases of the Thymus
63. Diseases of the Supra-Renal Glands
64. Diseases of the Spleen ...	1	4	5	3	...	419
65. Leukæmia—
(a) Leukæmia
(b) Hodgkin's Disease
66. Alcoholism	2	2	...	...	3
67. Chronic poisoning by mineral substances (leads, mercury, etc.)	1
68. Chronic poisoning by organic substances (morphia, cocaine, etc.)
69. Other general diseases
Auto-intoxication
Purpura Hæmorrhagica
Hæmophilia
Diabetes Insipidus
Others ...	2	5	7	1	1	58
III. AFFECTIONS OF THE NERVOUS SYSTEM AND ORGANS OF THE SENSES.						
70. Encephalitis (not including Encephalitis Lethargica)	2	2	1	...	2
71. Meningitis (not including Tuberculous Meningitis or Cerebro- spinal Meningitis)	5	5	2	...	5
72. Locomotor Ataxia	3	3	...	...	7
73. Other affections of the Spinal Cord ...	1	8	9	4	1	11
74. Apoplexy—
(a) Hæmorrhage	2	2	1	...	2
(b) Embolism	1	1	1	...	1
(c) Thrombosis ...	1	3	4	1	...	3
75. Paralysis—
(a) Hemiplegia	4	4	...	1	18
(b) Other paralysees ...	5	7	12	2	6	35
76. General Paralysis of the Insane
77. Other forms of Mental Alienation	3	3	1	...	6
78. Epilepsy	2	2	...	...	11
79. Eclampsia Convulsions (non-puerperal) 5 years or over	4	4	...	...	1
80. Infantile Convulsions	5
81. Chorea
82. A.—Hysteria	2	2	...	...	6
B. Neuritis ...	1	23	24	1	4	62
C. Neurasthenia	3	3	...	...	23
83. Cerebral Softening	1	1	...	...	1
84. Other affections of the Nervous System, such as Paralysis Agitans, Headache, Neuralgia, Insomnia, etc.	7	7	...	...	2,961

TABLES V AND VI.—*contd.*

DISEASES	TABLE V					TABLE VI
	Remaining in Hospital at end of 1933	Yearly Admissions	Total Cases Treated	Total Deaths	Remaining in Hospital at end of 1934	All Cases including both In- and Out- Patients
III. AFFECTIONS OF THE NERVOUS SYSTEM AND ORGANS OF THE SENSES—<i>contd.</i>						
85. Affections of the Organs of Vision						
(a) Conjunctivitis ... ..	...	...	...	...	...	...
(b) Trachoma ... ..	...	...	...	...	...	...
(c) Tumours of the Eye ... ..	...	...	...	...	...	...
(d) Iritis ... ..	...	...	...	...	...	...
(e) Other affections of the Eye	7	74	81	...	3	4,027
86. Affections of the Ear or Mastoid Sinus	...	15	15	2	1	2,440
(a) Otitis Media ... ..	...	...	...	...	...	...
(b) Others ... ..	...	...	...	...	...	...
IV. AFFECTIONS OF THE CIRCULATORY SYSTEM.						
87. Pericarditis ... ..	...	...	...	...	...	...
88. Acute Endocarditis	1	5	6	1	...	7
89. Angina Pectoris ... ..	...	...	...	...	...	...
90. Other Diseases of the Heart						
(a) Valvular						
Mitral ... ..	...	15	15	5	...	33
Aortic ... ..	...	...	...	...	...	2
Tricuspid ... ..	...	...	...	...	...	...
Pulmonary ... ..	...	...	...	...	...	...
Mixed or unspecified ... ..	...	...	...	...	...	...
(b) Myocarditis	1	22	23	9	5	55
D.A.H. ... ..	...	...	...	...	...	...
Others ... ..	...	2	2	...	1	43
91. Diseases of the Arteries						
(a) Aneurism ... ..	...	3	3	...	...	6
(b) Arterio-Sclerosis ... ..	...	...	...	...	...	...
(c) Other diseases ... ..	...	...	...	...	...	...
92. Embolism or Thrombosis (non-cerebral)	...	...	...	...	...	...
93. Diseases of the Veins						
Hæmorrhoids	3	58	61	...	4	198
Varicose Veins	1	6	7	...	...	31
Phlebitis	1	3	4	1	...	7
94. Diseases of the Lymphatic System						
Lymphangitis ... ..	...	23	23	...	2	247
Lymphadenitis, Bubo (non-specific)	2	82	84	...	6	483
Others ... ..	...	...	...	...	...	...
95. Hæmorrhage of undetermined cause ... ..	...	1	1	1	...	9
96. Other affections of the Circulatory System	...	...	...	...	...	...
V. AFFECTIONS OF THE RESPIRATORY SYSTEM.						
97. Diseases of the Nasal Passages and accessory sinuses	...	13	13	...	...	1,669
Adenoids ... ..	...	...	...	...	...	...
Polypus ... ..	...	...	...	...	...	...
Rhinitis ... ..	...	...	...	...	...	...
Coryza ... ..	...	...	...	...	...	...
Others ... ..	...	...	...	...	...	...
98. Affections of the Larynx						
Laryngitis ... ..	...	6	6	4	...	53
Tracheitis ... ..	...	...	...	...	...	...
99. Bronchitis						
(a) Acute ... ..	...	45	45	1	3	9,528
(b) Chronic	1	22	23	3	...	569
100. Broncho-Pneumonia ... ..	...	7	7	2	1	19
101. Pneumonia—						
(a) Lobar	1	89	90	25	1	131
(b) Unclassified ... ..	...	6	6	1	...	79
102. Pleurisy	1	30	31	3	3	36
102A. Empyema ... ..	...	...	...	...	...	...
103. Congestion of the Lungs ... ..	...	...	...	...	...	...
104. Gangrene of the Lungs ... ..	...	...	...	...	...	...
105. Asthma	1	9	10	...	1	437
106. Pulmonary Emphysema ... ..	...	...	...	...	...	...
107. Other affections of the Lungs						
Pulmonary Spirochaetosis ... ..	...	...	...	...	...	...
Others ... ..	...	...	...	...	...	8
VI. DISEASES OF THE DIGESTIVE SYSTEM.						
108. A Diseases of the Teeth or Gums—	1	18	19	...	...	7,211
Caries ... ..	...	...	...	...	...	9
Pyorrhœa ... ..	...	...	...	...	...	...
Others ... ..	...	...	...	...	...	...
B.—Other affections of the Mouth						
Stomatitis ... ..	...	...	...	...	...	...
Glossitis ... ..	...	...	...	...	...	...
Others ... ..	...	1	1	...	...	90
109. Affections of the Pharynx or Tonsils—	...	20	20	...	1	1,515
Tonsillitis ... ..	...	...	...	...	...	...
Pharyngitis ... ..	...	...	...	...	...	...
Others ... ..	...	...	...	...	...	...

TABLES V AND VI.—*contd.*

DISEASES	TABLE V					TABLE VI
	Remaining in Hospital at end of 1933	Yearly Admissions	Total Cases Treated	Total Deaths	Remaining in Hospital at end of 1934	All Cases including both In- and Out- Patients
VI. DISEASES OF THE DIGESTIVE SYSTEM—<i>contd.</i>						
110. Affections of the Œsophagus	1
111. A.—Ulcer of the Stomach	...	3	3	2	...	3
B.—Ulcer of the Duodenum	...	23	26	2	2	32
112. Other affections of the Stomach
Gastritis	...	3	3	...	...	33
Dyspepsia	...	4	4	...	...	1,721
Others
113. Diarrhœa and Enteritis—
Under two years of age	...	1	1	...	...	160
114. Diarrhœa and Enteritis—
Two years of age and over	...	43	43	3	1	2,027
Colitis
Ulceration
114A. Sprue
115. Ankylostomiasis	...	180	188	19	13	12,577
116. Diseases due to Intestinal Parasites
(a) Cestoda (Taenia)	2
(b) Trematoda (Flukes)
(c) Bilharzia
(d) Nemertoda (other than Ankylostoma)—
Ascaris	...	1	1	...	...	597
Trichocephalus dispar.
Trichina
Dracunculus
Strongylus
Oxyuris
(e) Coccidia
(f) Other parasites	...	5	5	...	...	133
(g) Unclassified
117. Appendicitis	...	14	15	1	...	24
118. Hernia	...	248	263	13	10	411
119. A.—Affections of the Anus and Rectum—
Fistula	...	35	37	3	3	48
Others
B.—Other affections of the Intestines—
Enteroptosis
Constipation	...	17	17	1	1	16,660
Others
120. Acute Yellow Atrophy of the Liver
121. Hydatid of the Liver
122. Cirrhosis of the Liver—
(a) Alcoholic
(b) Other forms	...	10	10	5	...	11
123. Biliary Calculus	...	2	3	...	...	3
124. Other affections of the Liver—
Abscess	...	1	1	1	...	2
Hepatitis	...	8	9	1	1	74
Cholecystitis	...	7	7	1	1	11
Jaundice	...	7	7	...	...	60
Others
125. Diseases of the Pancreas	...	1	1	...	...	1
126. Peritonitis (of unknown cause)	...	4	4	4	...	5
127. Other affections of the Digestive System	...	6	6	...	...	10
VII. DISEASES OF THE GENITO-URINARY SYSTEM (NON-VENEREAL).						
128. Acute Nephritis	...	4	4	...	...	62
129. Chronic Nephritis	...	24	28	10	2	40
130. A.—Chyluria	1
B.—Schistosomiasis	...	16	16	...	...	874
131. Other affections of the Kidneys and Ureters
Pyelitis	...	21	21	5	...	61
Others
132. Urinary Calculus...	...	4	4	...	...	4
133. Diseases of the Bladder	...	27	29	4	1	188
Cystitis
Others
134. Diseases of the Urethra
(a) Stricture	...	19	20	1	2	69
(b) Other	...	15	16	3	4	94
135. Diseases of the Prostate—	...	19	21	3	1	28
Hypertrophy
Prostatitis
136. Diseases (non-Venereal) of the Genital Organs of Man
Epididymitis	...	36	36	2	4	105
Orchitis	...	32	33	...	1	409
Hydrocele	...	214	228	...	11	349
Ulcer of Penis...	...	11	12	...	...	567
Varicocele
Others	...	27	27	...	3	347
137. Cysts or other non-malignant Tumours of the Ovaries	...	2	2	...	...	6

TABLES V AND VI.—*contd.*

DISEASES	TABLE V					TABLE VI
	Remaining in Hospital at end of 1933	Yearly Admissions	Total Cases Treated	Total Deaths	Remaining in Hospital at end of 1934	All Cases including both In- and Out-Patients
VII. DISEASES OF THE GENITO URINARY SYSTEM (NON-VENEREAL).— <i>contd.</i>						
138. Salpingitis—						
Abscess of the Palvis	1	15	16	...	...	40
139. Uterine Tumours (non-malignant)	1	12	13	...	1	34
140. Uterine Hæmorrhage (non-puerperal) ... ..	...	...	...	...	...	3
141. A.—Metritis	1	6	7	...	...	8
B.—Other affections of the Female Genital Organs—						
Displacement of Uterus	1	4	4	...	...	29
Amenorrhœa ... ..	...	...	...	...	...	45
Dysmenorrhœa ... ..	...	1	1	...	...	56
Leucorrhœa ... ..	...	...	...	...	...	21
Others	3	17	20	...	2	238
142. Diseases of the Breast (non-puerperal)—						
Mastitis ... ..	...	1	1	...	...	23
Abscess of Breast ... ..	...	3	3	...	...	53
Others ... ..	...	...	...	...	...	...
VIII. PUERPERAL STATE.						
143. A.—Normal Labour ... ..	...	38	38	...	3	43
B.—Accidents of Pregnancy						
(a) Abortion or Miscarriage ... ..	...	9	9	...	...	15
(b) Ectopic Gestation ... ..	...	...	...	...	...	...
(c) Other accidents of Pregnancy ... ..	...	11	11	3	...	21
C.—Ante-natal supervision ... ..	...	...	...	...	...	...
144. Puerperal Hæmorrhage ... ..	...	7	7	1	...	7
145. Other accidents of Parturition ... ..	...	5	5	...	...	5
146. Puerperal Septicæmia ... ..	...	10	10	4	...	10
147. Phlegmasia Dolens ... ..	...	1	1	...	1	1
148. Puerperal Eclampsia ... ..	...	2	2	...	...	2
149. Sequelæ of Labour ... ..	...	...	...	...	...	...
150. Puerperal affections of the Breast ... ..	...	...	...	...	...	...
IX. AFFECTIONS OF THE SKIN AND CELLULAR TISSUES.						
151. Gangrene ... ..	...	18	18	3	1	32
152. Boil ... ..	...	1	1	...	...	1,203
Carbuncle	1	...	1	...	...	29
153. Abscess	4	93	97	6	5	1,442
Whitlow and Onychia ... ..	...	37	37	...	1	369
Cellulitis	4	33	37	4	...	1,131
154. A.—Tinea ... ..	...	...	...	...	...	1,193
B.—Scabies ... ..	...	7	7	...	...	8,490
155. Other Diseases of the Skin						
Erythema ... ..	...	...	...	...	...	11
Urticaria ... ..	...	1	1	...	...	49
Eczema ... ..	...	5	5	...	...	734
Herpes ... ..	...	2	2	...	...	81
Psoriasis ... ..	...	...	...	...	...	36
Elephantiasis	2	66	68	...	4	244
Myiasis ... ..	...	...	...	...	...	5
Chiggers ... ..	...	12	12	...	...	1,343
Cutaneous Leishmaniasis... ..	...	...	...	...	...	...
Ulcers	82	738	820	4	13	27,291
Others	3	15	18	...	...	1,822
X. DISEASES OF THE BONES AND ORGANS OF LOCOMOTION (OTHER THAN TUBERCULOUS)						
156. Diseases of the Bones—						
Osteitis	5	13	18	...	1	62
Periostitis ... ..	...	...	...	...	...	...
Others ... ..	...	...	...	...	...	...
157. Diseases of Joints						
Arthritis ... ..	...	17	17	...	...	783
Synovitis ... ..	...	20	20	...	...	135
Others ... ..	...	...	...	...	...	...
158. Other diseases of Bones or Organs of Locomotion						
(a) Teno-synovitis ... ..	...	...	...	...	...	...
(b) Ganglion ... ..	...	...	...	...	...	...
(c) Others	3	31	34	...	...	2,430
XI. MALFORMATIONS.						
159. Malformations—						
Hydrocephalus ... ..	...	...	...	...	...	...
Hypospadias ... ..	...	1	1	...	...	1
Spina Bifida ... ..	...	...	...	...	...	...
Others ... ..	...	4	4	...	...	6
XII. DISEASES OF INFANCY.						
160. Normal living babies ... ..	...	...	...	...	...	...
160A. Congenital Debility ... ..	...	...	...	...	...	...
161. Premature Birth... ..	...	...	...	...	...	...
162. Other affections of Infancy ... ..	...	1	1	1	...	...
162A. Babies still-born ... ..	...	...	...	...	...	...
163. Infant neglect (infants of three months or over) ... ..	...	2	2	...	1	2

TABLES V AND VI.—*contd.*

DISEASES	TABLE V					TABLE VI
	Remaining in Hospital at end of 1933	Yearly Admissions	Total Cases Treated	Total Deaths	Remaining in Hospital at end of 1934	All Cases including both In- and Out- Patients
XIII. AFFECTIONS OF OLD AGE.						
164. Senility	56	233	289	127	77	376
Senile Dementia ... ..	...	...	...	...	...	...
XIV. AFFECTIONS PRODUCED BY EXTERNAL CAUSES.						
165. Suicide by Poisoning ... ..	...	...	...	...	...	...
166. Corrosive Poisoning (intentional) ... ..	...	...	...	...	...	...
167. Suicide by Gas Poisoning ... ..	...	...	...	...	...	...
168. Suicide by Hanging or Strangulation ... ..	...	...	...	...	...	...
169. Suicide by Drowning ... ..	...	...	...	...	...	...
170. Suicide by Firearms ... ..	...	...	...	...	...	...
171. Suicide by cutting or stabbing instruments ... ..	...	...	...	...	...	...
172. Suicide by jumping from a height ... ..	...	...	...	...	...	...
173. Suicide by crushing ... ..	...	...	...	...	...	...
174. Other suicides ... ..	...	...	...	...	...	...
175. Food Poisoning ... ..	...	...	...	...	...	...
Botulism ... ..	...	...	...	...	...	...
176. Attacks of poisonous animals ... ..	...	...	...	...	...	...
Snake Bite ... ..	...	...	...	...	...	15
Insect Bite ... ..	...	1	1	...	...	79
177. Other accidental Poisonings... ..	...	1	1	...	...	3
178. Burns (by fire)	2	19	21	1	2	441
179. Burns (other than by fire) ... ..	...	...	...	...	...	63
180. Suffocation (accidental) ... ..	...	...	...	...	...	...
181. Poisoning by Gas (accidental) ... ..	...	...	...	...	...	...
182. Drowning (accidental) ... ..	...	1	1	...	...	7
183. Wounds (by Firearms, war excepted) ... ..	...	1	1	...	...	1
184. Wounds (by cutting or stabbing instruments) ... ..	...	99	99	2	6	3,168
185. Wounds (by fall)... ..	3	69	72	...	...	3,693
186. Wounds (in Mines or Quarries) ... ..	...	...	...	...	...	63
187. Wounds (by Machinery) ... ..	...	12	12	...	...	39
188. Wounds (crushing, <i>e. g.</i> , railway accidents, etc.)	1	2	3	...	...	10
189. Injuries inflicted by Animals, Bite, Kicks, etc.) ... ..	...	7	7	...	...	40
190. Wounds inflicted on Active Service ... ..	...	...	...	...	...	...
191. Executions of civilians by belligerents... ..	...	...	...	...	...	...
192. A.—Over fatigue... ..	...	...	...	...	...	...
B.—Hunger or Thirst ... ..	...	...	...	...	...	...
193. Exposure to Cold, Frost bite, etc. ... ..	...	...	...	...	...	...
194. Exposure to Heat ... ..	...	...	...	...	...	...
Heatstroke ... ..	...	...	...	...	...	7
Sunstroke ... ..	...	...	...	...	...	...
195. Lightning Stroke... ..	...	...	...	...	...	...
196. Electric Shock ... ..	...	...	...	...	...	...
197. Murder by Firearms ... ..	...	...	...	...	...	...
198. Murder by cutting or stabbing instruments ... ..	...	...	...	...	...	...
199. Murder by other means ... ..	...	...	...	...	...	...
200. Infanticide (murder of an infant under one year)... ..	...	...	...	...	...	...
201. A.—Dislocation ... ..	...	10	10	...	...	37
B.—Sprain ... ..	...	5	5	...	...	341
C.—Fracture	6	69	75	6	9	95
202. Other external Injuries	1	26	27	...	1	3,120
203. Deaths by Violence of unknown case ... ..	...	...	...	...	...	...
XV. ILL-DEFINED DISEASES.						
204. Sudden Death (cause unknown) ... ..	...	...	...	...	...	...
205. A.—Diseases not already specified or ill-defined ... ..	...	...	...	...	...	...
Ascites ... ..	...	3	3	...	...	14
Edema ... ..	...	4	4	...	...	50
Asthenia	17	65	82	19	12	1,477
Shock ... ..	...	2	2	...	...	4
Hyperpyrexia ... ..	...	...	...	...	...	...
B.—Malingering	1	1	2	...	...	4
XVI. DISEASES, THE TOTAL OF WHICH HAVE NOT CAUSED 10 DEATHS, INCLUDING P.U.O. AND N.Y.D. ... ..	...	30	30	2	...	2,725
Total, Sections I to XVI... ..	360	4,463	4,823	446	329	157,691
Examinations ... ..	...	...	...	...	...	1,995
GRAND TOTAL	360	4,463	4,823	446	329	159,686

APPENDIX I.

REGISTRATION OF MEDICAL PRACTITIONERS, DENTISTS AND DRUGGISTS.

At the beginning of the year there were on the Register 31 medical practitioners, 6 dentists and 21 druggists; at the end of the year 28 medical practitioners, 6 dentists and 21 druggists. Actually resident in the Protectorate at the end of the year there were 18 medical practitioners, 2 dentists and 21 druggists of whom 12 medical practitioners and 6 druggists were in Government Service.

APPENDIX II.

CONTROL OF OPIUM.

The following are the particulars regarding opium addicts:—

	M.	F.	M.	F.	M.	F.
	1932		1933		1934	
Number of opium addicts remaining from the previous year	...	57 23	...	55 22	...	51 19
Number of applications for permit during the year	...	— —	...	5 —	...	2 —
Number of permits granted during the year	...	— —	...	5 —	...	1 —
Number of permits refused during the year	...	— —	...	— —	...	1 —
Number of permits cancelled :—						
(a) Owing to deaths	...	2 1	...	— 3	...	2 1
(b) Owing to other causes	...	— —	...	9 —	...	8 2
Number of opium addicts remaining at the end of the year	...	55 22	...	51 19	...	42 16
		ozs.		ozs.		ozs.
Amount of opium issued to addicts during the year	...	442	...	448	...	424
		Rs. cts.		Rs. cts.		Rs. Cts.
Amount received in payment for opium issued	...	2,741 50	...	2,801 87	...	2,651 25

APPENDIX III.

ANNUAL REPORT OF THE DENTAL SURGEON FOR 1934.

The following are the figures in respect of work carried out for Government Officials and natives of the Protectorate during the year.

(1) Appointments	...	...	...	...	...	...	...	3,027
(2) The following treatments were given:—								
Fillings	...	...	...	...	...	...	...	358
Root fillings	...	...	...	...	...	...	...	47
Extractions	...	...	...	...	...	...	...	3,322
(3) Conservation Work:—								
Prophylaxis and examinations	...	...	...	...	...	...	...	1,723
(4) Prosthetic Work:—								
Dentures	...	...	...	...	...	...	...	42
Crowns	...	...	...	...	...	...	...	3

(5) Pemba was visited twice and the children in the district schools in both Zanzibar and Pemba were inspected when possible. A systematic programme for the dental inspection and treatment of all school children will be followed during 1935.

